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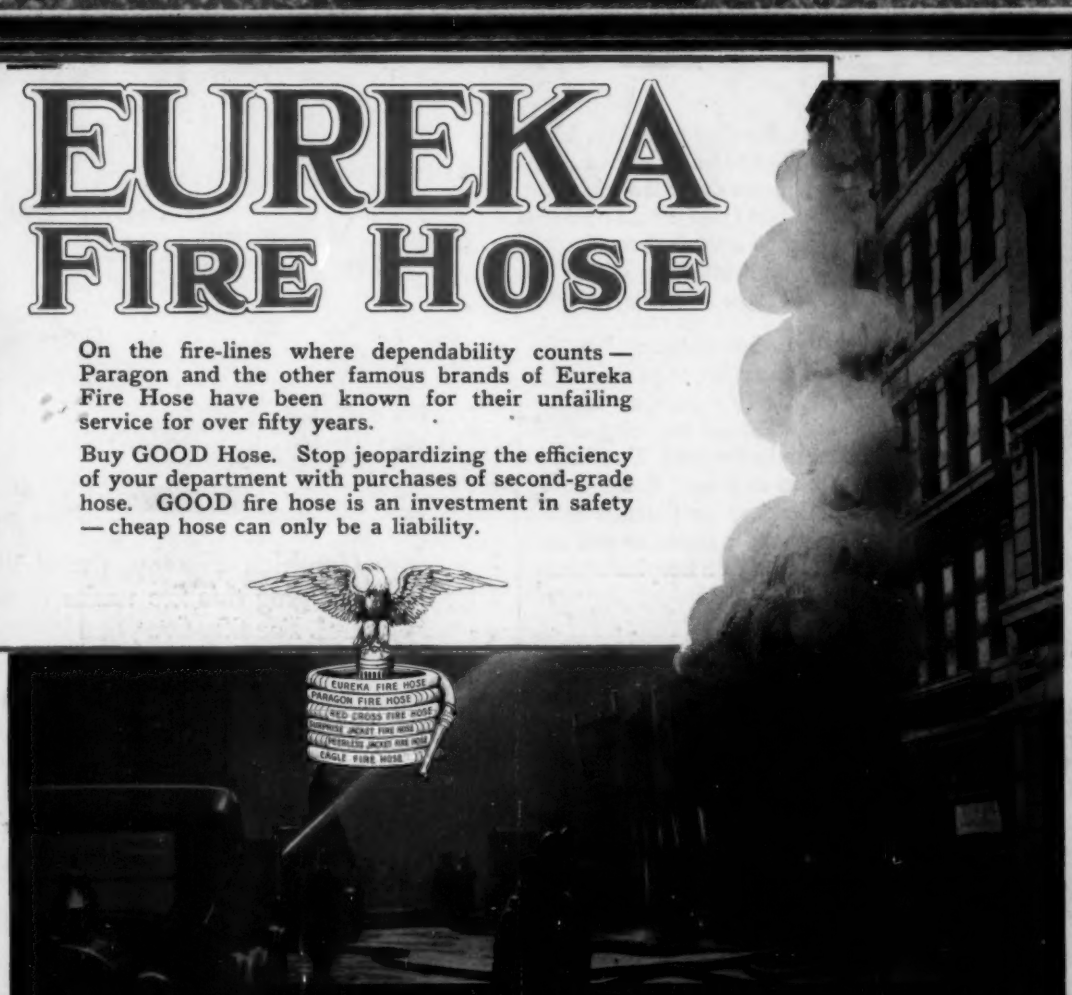

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No. 13 *of a series of experiences of our noted Fire Chiefs*

FRANK HOCHREITER
Chief
Wilkes-Barre, Pa.

At 10.50 on Palm Sunday morning, March 21, 1920, a fire, starting in the basement of St. Mary's Convent presumably from defective wiring, caused the death of one nun, the assistant mother superior, and the serious injury of seven other nuns, and totally destroyed the large building which was the mother house of the Order of Mercy.

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FRANK HOCHREITER
Chief

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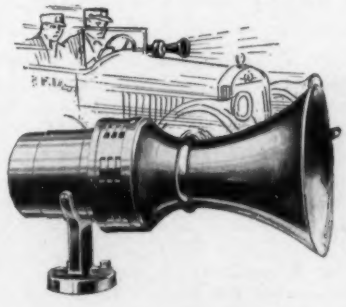

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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Hello, London!

MIGHTY glad to hear from you, London, and especially to learn that you like the new FIRE ENGINEERING so much.

¶ Our attention has been called to the following paragraph in the March 1st issue of the well-known English publication, "The Fireman" of London:

¶ **"Our esteemed contemporary, Fire and Water Engineering, of New York, has been undergoing the process of bi-section, and now appears as two separate publications, FIRE ENGINEERING and WATER WORKS ENGINEERING. The first number of FIRE ENGINEERING, published on January 10th, is in itself something of an achievement, and represents technical journalism at its best."**

¶ In thanking you and the many other readers who have been so kind as to express approval of our efforts, may we assure you that we shall strive to make this magazine more and more valuable to you as time goes on. To this end, your constant co-operation will be invaluable.

The Publishers

CONTENTS

APRIL 10, 1926

VOL. LXXIX No. 7

Centralizing the Department in One Station, by Harry Belknap (Illustrated) 339
All Arlington, Mass., Companies, Except Two in Outlying Districts, Housed in Central Station.

Store Presents City with Fire Station, by Charles W. Geiger (Illustrated) 341
For Privilege to Extend Warehouse Over Structure, It Builds Fire House on City Land.

Use Heavy Streams to Kill Heat (Illustrated) 342
Large Streams from Deck Gun Necessary in Reducing Temperature from Potash Fire.

The University of Illinois Course of Instruction in Fire Protection (Illustrated) 345
Mechanical Installations, by Raymond T. Nelson.

With the Editor 347
Comments on Current Events and Live Topics by our Editorial Staff.

Questions and Answers 349
Replies to Questions on all Manner of Subjects of Fire Fighting and Fire Protection.

Volunteer Fire Department (Illustrated) 353
Town Auditorium Fire.

Recent Important Fires Specially Reported (Illustrated) 355
City of Newport, Ark., Nearly Destroyed in Wooden Shingle Roof Fire—Two Explosions Destroy Newark, N. J., Alcohol Plant—Burnings of Two Weeks.

Industrial Plant Protection (Illustrated) 360
Industrial Fire Department Competition.

Recent Patents (Illustrated) 364
Description of Patented Inventions of Interest to Fire Department Officials.

False Alarms 367
The Humorous Side of the Fire Protection Profession

Fire Department Activities 368
Newsy Notes from All Over the Country, with Matters Firemanic.

Fire Alarm Notes 368
News of the Activities of Fire Alarm Division of the Fire Department.

Fire Department Improvements 371
Record of Business Activities in the Fire Protection Field.

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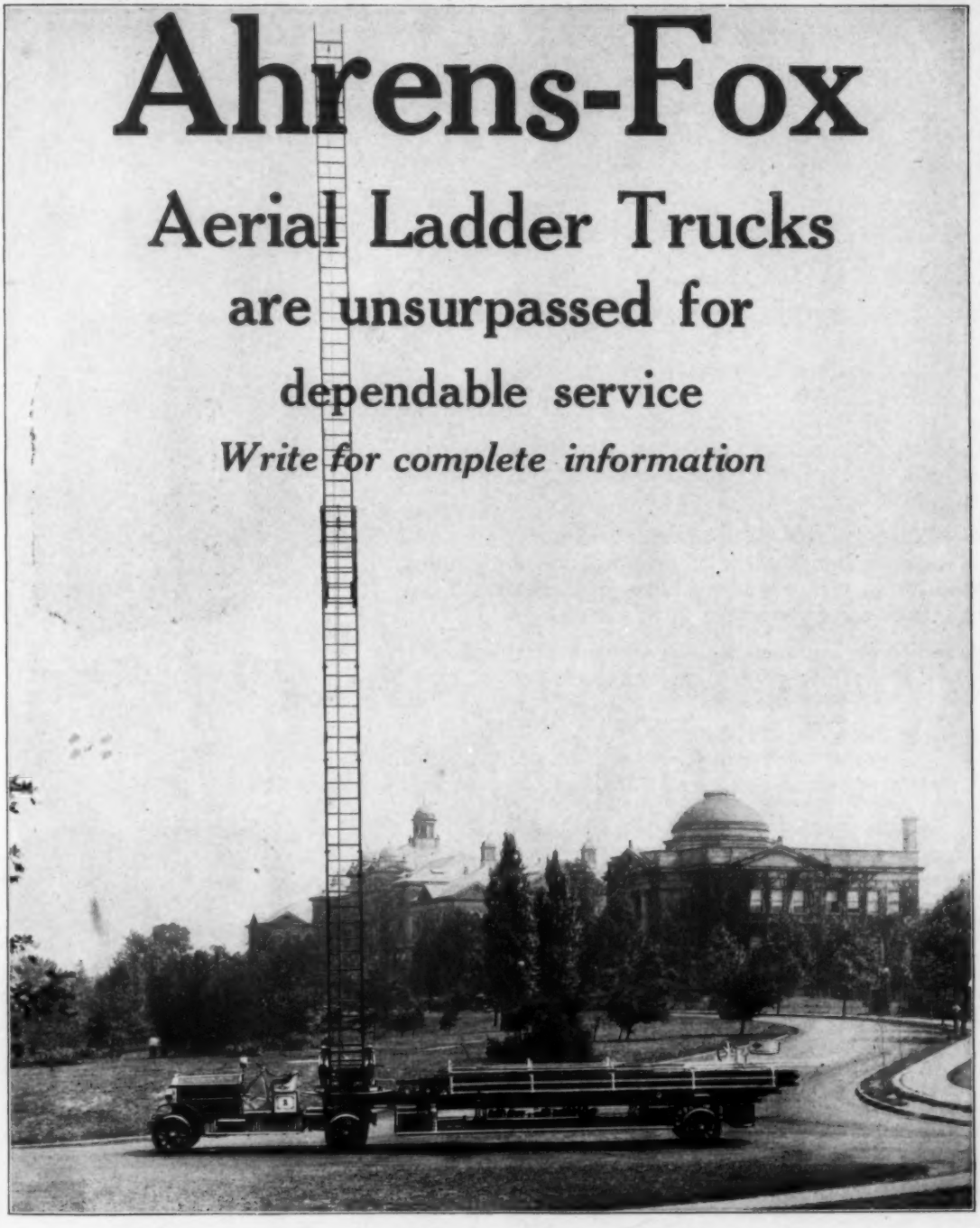
Write for complete information



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3rd—Both telephone and telegraph connection with headquarters from every signal box.

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THE GARL SIGNAL COMPANY

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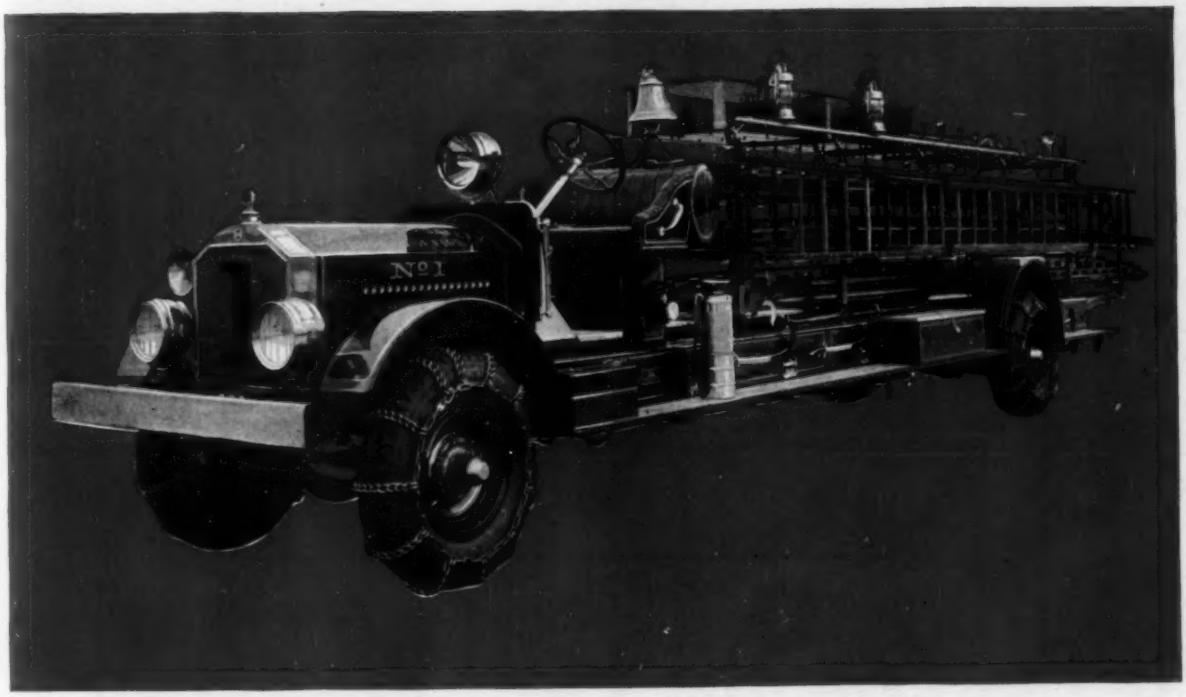

The Childs *City Service Fire Truck on* Childs *Standard Heavy Duty Chassis—recently placed in service at Utica, N. Y.*

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All standard types of apparatus are available in the new line, and all are priced well within reach of the budget of any community where rugged, powerful apparatus is required.

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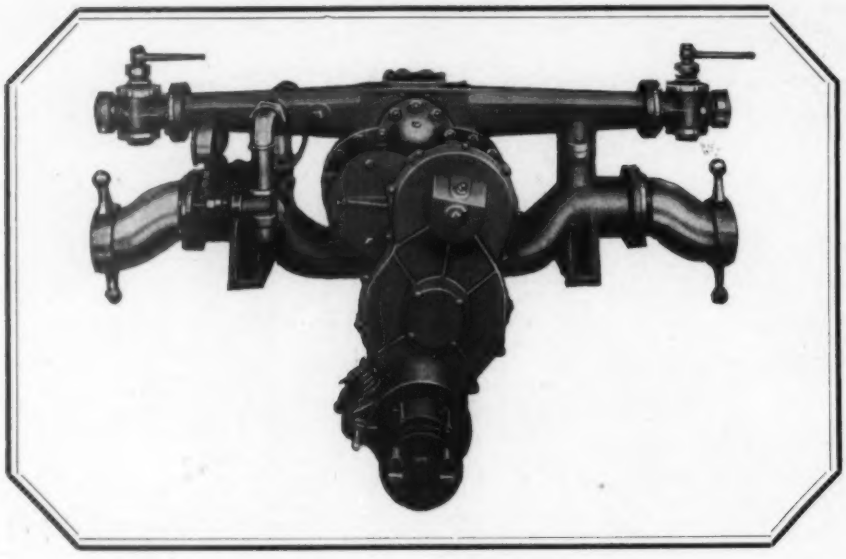
Fire Protection Engineers and Manufacturers
136 Turner Street, Utica, N. Y.
Sales and Engineering Representatives in all leading cities

Foamite-Childs Protection

A Complete Engineering Service

Against Fire



It Put Out the Fires and Then---

The NORTHERN pump proved so much better than the general run of pumps in the fire fighting field, that engineers in the oil industries heard about it. They gave it a try out for heavy duty where high pressures for long periods are required. It made good with a bang—where other pumps failed. Now when the oil engineers run into a pumping snag they call for a NORTHERN pump—and it keeps on making good.

This may have nothing to do with fire fighting—but remember this: the qualities that made the Northern stand out so that oil engineers became interested in it are still built into the NORTHERN pump. That is why you can't afford to buy any pumps until you know all about the NORTHERN. Write for bulletins giving the whole story, they're free.

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Foam, of course, is the best extinguishing agent. But to get the best foam in the practical form and in the dependable quantities necessary for effective "fool proof" fire fighting is possible only with the new

AMDYCO

Showing the Amdyco Foam Generator in operation. Water comes in one line (under regular pumper or hydrant pressure) mixes with the Amdyco Foam Powder that is fed into the hopper as demonstrated above, and goes out the other line as a foam stream.

FOAM POWDER

used with the New Amdyco

FOAM GENERATOR

EXHAUSTIVE tests and actual performance at fires, particularly the Everett, Mass., oil fire Jan. 25th where Amdyco saved the day, have proven conclusively the superiority of the Amdyco method. What particularly appeals to fire officials who are concerned with the ever-increasing problem of fighting oil, gasoline and other flammable liquid fires, is the practical utility of the Amdyco Foam equipment in fire department work, the speed with which it can be put into operation, its remarkable simplicity, its low cost.

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The portable Amdyco Foam Generator, with an adequate supply of Amdyco Foam Powder, can be carried conveniently as a part of your pumper or hose car equipment.

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A little journey through the GAMEWELL FACTORY

The Indian of Pipestone County

Back in Pipestone County just west of the Mississippi, there is an Indian, who, little though he realizes it, is one of the few available sources of pipestones in this country.

Each year this Indian makes a hunting and prospecting trip of several months duration into the hills of Minnesota. Just before he starts we get in touch with the County Sheriff. A banknote of a fairly large denomination is sent to him. He in turn communicates our needs to the Indian. The Sheriff tears the banknote into two halves, one of which he gives to the Indian, the other half he keeps. When the Indian returns with the pipestone, the other half of the banknote is given to him and he goes on his way. The pipestone is forwarded to us —no purchase order, no bills or receipts.

Pipestone is used as an insulator in various pieces of our apparatus. Several substitutes are available but none really take the place of pipestone—so pipestone it is, even though difficult to obtain, and such is the case throughout our business. Materials going into our apparatus must be of the highest grade obtainable, for upon the performance of our apparatus rests the safety of thousands of lives and millions of dollars in property.

Where can these materials be obtained? That is a problem for our Purchasing Department. We look to all parts of the World for the raw materials best suited for our products. Our glass comes from a famous glass company in Belgium; our iron, mined in Sweden, is known the world over for its pureness, marble for the switchboards comes from Italy where the finest of marble is produced, and so on down the list.

Hand in hand with the high grade of Gamewell workmanship goes the high quality of Gamewell materials.

$500.00 Firemen's Relief Contest

Remember, there is a chance for you to make $250.00 or $500.00 for your Firemen's Relief Fund. If you have not seen the details write for bulletin.

The Gamewell Company

Newton Upper Falls, Mass.

"A Box A Block"

FIRE ENGINEERING

(A Consolidation of Fire and Water Engineering and The Fire Engineer)

The Leading Journal of the Fire Protection Profession

VOLUME LXXIX APRIL 10, 1926 NUMBER 7

Centralizing the Department In One Station

All of the Apparatus of Arlington, Mass., Except Those in Two Outlying Companies, Housed in Central Station—Its Handsome Design

By HARRY BELKNAP, Boston, Mass.

THE rather unique idea of centralizing practically all of a city's fire apparatus under one roof is carried out in the new fire house of Arlington, Mass., one of the handsomest central fire stations ever built in a small city, housing as it does all but three of the fire trucks of the municipality.

It is an imposing brick structure situated on the triangular plot at the junction of Franklin Street, Broadway, and Massachusetts Avenue in Arlington Centre.

Unusual Ideas of Fire House Construction

The plans were drawn by Architect George Robinson, of Boston, and present many unusual ideas in fire department construction. For example there are six large double doors on the apparatus floor so that the machines can be driven in from any side and there is no need of backing up when entering the building.

The fire station is of octagon shape, two stories high, with a tower 83 feet high, and is built of steel and concrete with a brick exterior trimmed with stone.

The basement, with an inclined entrance leading from Franklin Street, is divided into two sections, one half being occupied by the wire division and the other half fitted up for a repair shop. The heating plant is also located in the basement which is lined with concrete and is well lighted. Just outside the basement are two rooms which will be utilized for a public convenience station, one for men and one for women, with direct entrance from the street.

The Apparatus Floor

The apparatus floor is a large open space without pillars or other encumbrances. Room is provided for eight pieces of motor apparatus. On this floor under the tower in front is a stone trimmed watch room opening off the apparatus room. Here is the patrol desk and here are the gongs, push buttons, and mutual aid signal board. This board will eventually be connected with the fire alarm headquarters of six adjoining municipalities. At present it is connected with Belmont, Medford, and Somerville. Later Cambridge, Lexington, and Winchester will be joined to the system. There is an arrangement for mutual aid at alarms near the border lines of the towns and for response and covering-in at general alarms.

The stairs, toilets and hose hoist are also in the space at the base of the tower. The apparatus floor is of concrete, the walls having a seven foot dado of glazed brick above which there is white sanded brick. The ceiling is beamed and paneled with wood in natural finish.

On the Franklin Street side joined to the main building and entered through fire resisting doors in an entirely separate section for the fire alarm equipment. The battery room is on the first floor and on the second floor are the room containing the signal equipment which is of the Gamewell automatic type and bedroom and office for the Superintendent of Fire Alarms, William Mason.

Pleasant Living Quarters for Officers and Men

The second floor of the main structure contains the living quarters for officers and men. Facing the front of the building, and looking out on the park lawn containing the Soldiers' Monument, is the Common Room which has a large open fireplace of stone, pool table, Victrola, and radio set. Opening off this room is the private office of Chief Daniel B. Tierney which connects with his bedroom, shower bath and toilet.

Two Views of Handsome New Central Fire Station of Arlington, Mass., in Which All but Three of City's Apparatus is Centered.

Grouped around a central patio lighted by a skylight are a series of connecting rooms with two and three beds to a room. Separate rooms are provided for the officers and for two men of the wire division. Shower baths and toilets in white tiled rooms and adequate lockers complete the equipment. In the central patio are a sink, ice-box, small gas range, bubbler drinking fountain, seats and benches.

The tower contains space for drying hose and at the top will be mounted a large bell and a compressed air fire alarm siren.

The Apparatus of Station

The apparatus in this Central Station consists of a 750 gallon Seagrave triple combination motor pupming, engine with booster pump attachment, a Seagrave double banked city service ladder truck equipped with chemical tank, a Knox combination chemical and hose wagon, and the car of Chief Tierney. A reserve Knox combination chemical and hose wagon and police ambulance are also stored in the house. In the basement there is space for light trucks of the wire division and for apparatus undergoing repairs.

A gasoline filling tap is located on the main floor connected with an underground tank outside. Sliding poles and a stairway lead to the second floor. The Common Room before mentioned is very handsomely finished in brown stucco and natural wood and contains a large framed portrait of Ex-Chief Charles Gott.

The Arlington Fire Department

The Arlington Fire Department consists of 21 permanent men and 30 call men. The new Central Station was built by the Beacon Construction Company at a cost of $150,000. There are two other fire stations, one a two story brick structure on Massachusetts Avenue known as the Highland Station equipped with a Robinson hook and ladder truck and a Knox combination chemical and hose wagon, and the other a new bungalow station at Park Circle built of brick with a slate roof. This station was only recently completed and is opposite the handsome water standpipe at the end of Park Avenue on a high hill known as the summit. A 650 gallon Knox triple combination motor pumping engine is stationed in the bungalow.

Value of Watch Service at Fire

The recent fire in the Equitable Building, New York City, brought out the value of a watch service. Upon the receipt of an alarm sent in from the twenty-fourth floor of the building, the American District Telegraph Company instantly relayed the alarm to New York fire department and at the same time dispatched one of their roundsmen to ascertain if the fire was of any consequence.

This company has 1,201 subscribers in New York City, which includes most all of the large office buildings, department stores and hotels. The value of the property protected by this system is in excess of four billions of dollars. During the past year, the company handled and transmitted eighty alarms to the fire department, involving a loss, on the average of .04 of 1%. The company operates 118 central stations throughout the United States, serving a total of 11,995 subscribers. The past year 2,096 alarms were handled—of these, 1,177 involved no loss whatsoever, and only 363 had losses exceeding $500.

Pennsylvania Volunteers Incorporate—The Republic Volunteer Fire Company has been incorporated in Republic, Pa., for the purpose of furnishing fire protection to property in that section.

Thieves Cripple Philadelphia Fire Alarm—Two men are under arrest in Philadelphia for stealing fire alarm cable, crippling the system and endangering the lives of a million of people. The stolen cable was valued at $5,000. It was sold to a junk dealer for five cents a pound.

Manizales, Colombia, Rising From Its Ash Heap

"Manizales has thrown a veil over the horrid hecatomb, and everybody is now working strenuously to raise the city from its ashes and hold her up to the world with increased pride and prosperity," is the advice received from Chief Guizado of the fire department of Panama. He adds that Manizales, Colombia, will soon have completely obliterated the scars of the conflagration which in July last completely reduced a large section of the city to ashes, because of the strong community spirit and civic pride.

Commandante Juan A. Guizado, Panama City, Panama.

The fire insurance companies have paid to the victims of the fire approximately $5,000,000, which afford sufficient funds with which to push the work of reconstruction. Discussing the possibility of the city establishing a modern water system, the chief says that while it would be a difficult task, it nevertheless was not impossible. There is a movement on foot to float a $6,000,000 loan to provide fire insurance for the city along modern lines.

Chief Guizado reports his reception in Colombia to have been most cordial; that on his arrival in Manizales he undertook the task of reorganizing the new fire brigade, and was ably assisted in this work by Captain Ernest Arosemena; that the people vied with each other in an effort to make the two Panama firemen feel that their efforts were fully appreciated; and that on the occasion of the inauguration of the new brigade special gold medals were bestowed on himself and Captain Arosemena.

The Republic of Panama celebrated the 104th anniversary of its independence from Spain last November 28. One of the features was a parade of the fire department, and the acceptance of an ambulance for the Red Cross section of the organization.

Cincinnati Makes Record Run

A fire, caused from an exploding gasoline stove, destroyed several dwellings and half a business block in Georgetown. The Biehn Hotel, Georgetown's only hostelry, was completely leveled, and its guests, surprised in their sleep were compelled to flee, leaving all of their belongings. The damage to property was estimated at $135,000. Of particular interest in connection with the fire is the record run made by the fire apparatus which was called from Cincinnati, Ohio, forty-one miles away, and made the run in about an hour. The illustration herewith shows the ruins after the fire.

Store Presents City with Fire Station

For Privilege to Extend Warehouse Over Structure, Builds Fire House on City Land—Some Unique Features

By CHARLES W. GEIGER, San Francisco, Cal.

A PRIVATELY built fire station in a large city is a rather unusual thing, but in this case both parties to the transaction benefitted by it, the city being the gainer to the extent of an up-to-date house free of cost:

A $35,000 fire house has been built for the San Francisco Fire Department free of charge by Hale's department store in return for the privilege of extending their warehouse over the fire house. The city owns the lot on which the fire house shown in Fig. 1, is constructed and the department store owns the lot immediately to the west. The management of Hale's store decided that the small lot would not be large enough to build the warehouse of the size desired, so they built the fire house, free to the city and over this they built several stories to be used as their warehouse. In other words the fire house is the foundation for the warehouse.

Fig. 1. Fire House Built for City by a San Francisco Department Store Free of Cost, in Consideration of the Privilege of Erecting Several Stories of Their Establishment Above It.

Hole in Floor Takes Place of Repair Pit

The main floor of the fire house is divided into two sections, one for the squad wagon and the other for a truck. In the floor of the quarters occupied by the squad wagon there is a square hole as shown in Figs. 2 and 3 by means of which repairs are made on the motor equipment and which eliminates the usual pit. In the basement as shown in Fig. 3 there is a large portable platform which is moved to a point directly under the square opening in the floor above. This is of such a height that the men when standing on same can reach up through the square opening and make any necessary repairs or adjustments. This has been found to be more satisfactory than when the usual pit is used.

At the left in Fig. 3 is shown an electrically operated centrifugal pump which delivers water accumulating in the basement into the sewer. At the right of the platform there is a boot-room where the turn-out rigs are kept. In the basement there is also a kitchen, locker for supplies, fuel oil tank and a 50-gallon lubricating tank, both of these oil tanks being filled from the sidewalk. Both tanks are also connected with oil pumps located on the first floor of the Squad Wagon headquarters.

Officers' and Men's Quarters

The officers' quarters occupy the front of the second floor and the crew's quarters occupy the center of the same floor with the bath-room and lockers in the rear. Here there are two separate wash rooms, shower and tub bath and metal lockers. The officers' quarters have a southern and sunny exposure, are very modern and comfortable and equipped with connecting bath room

(*Continued on page 372*)

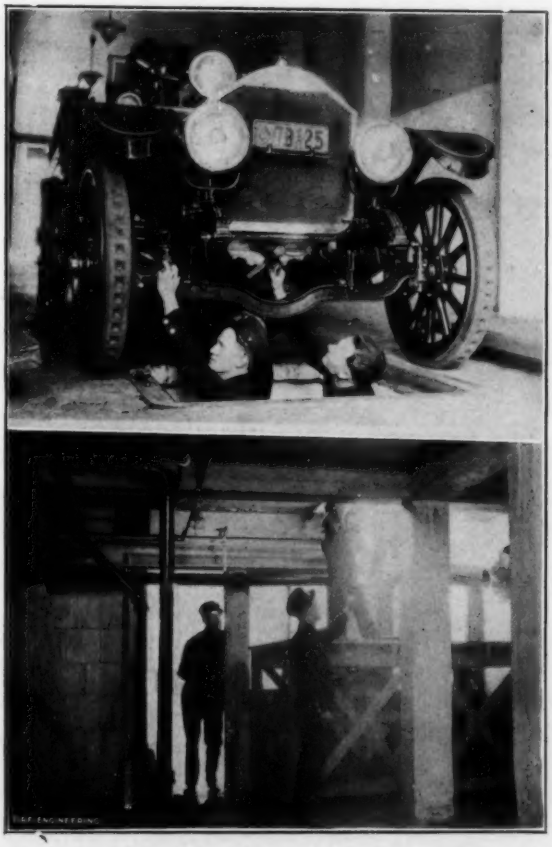


Fig. 2 (Upper). Hole in Floor of San Francisco Fire House by Means of Which Repairs Can be Made to Truck Installed Therein. Fig. 3 (Lower). Basement of Fire House, Showing How Hole is Utilized for Repairs in Place of Pit. Men are Standing on Large Portable Platform. Centrifugal Pump at Left Used to Remove Accumulation of Water in Basement.

Use Heavy Streams to Kill Heat

Large Streams from Deck Gun Necessary in Reducing Temperature from Potash Fire—Long Range to Cover Exposures

THE fire described in the last issue of FIRE ENGINEERING was one wherein the use of large streams was most essential.

The point the fire clearly demonstrated is that in order to reduce high temperature and cover exposures at long range large caliber streams at high pressures are invaluable. The failure to make use of deck guns in this particular instance was responsible for fire extending to buildings across street as well as for the extent of the fire in buildings adjacent to the chemical laboratory.

Fires of this type require concentration of heavy streams.

To sum up the problem as given in the last issue of this journal, the fire started in the chemical laboratory building shown in Fig. 2 herewith. At the time of the fire a strong wind was blowing from the north.

The exact cause of the fire was not known, but it is evident from witnesses that the fire started at the point indicated and immediately thereafter spread by explosion into building B and then into building C through open fire doors. The fire doors closed subsequent to the ignition of contents of these buildings. The presence of ammonium nitrate in building A resulted in the production of a great amount of "laughing gas" which made operation in this building extremely dangerous.

In building B the presence of chemicals as well as wooden containers increased the intensity of the fire very rapidly while in building C the large quantity of chlorate of potash which was stored therein, upon igniting, sent forth a flare which drove the firemen back and ultimately ignited the sash and door plant across Wyburn Avenue.

There was good water supply and the pressure throughout the fire ranged around 50 pounds. Hydrants are indicated in Fig. 2. Fig. 1 shows the layout of the buildings on the Smith Street side of the block.

When the fire department arrived building B was fully involved on the ground floor and fire had extended to the second floor; building A was well ablaze on the ground floor while on the ground floor of building C fire had already entered and was making considerable headway.

At the time the second alarm was transmitted the flare occurred from building C.

Suggested Method of Handling Fire.

The following is a suggested method for handling this fire from the time when the flare occurred.

It will be assumed that the first alarm assignment was placed as indicated in the description of the fire as fought and this article will carry the operations from that point onward.

Placement of lines of first alarm company were as follows: Engine No. 1 stopped at hydrant No. 1 and stretched in a single line to building B. This building was taken rather than building C as the fire had gained considerable proportions and it was thought that due to the large open area, more effective work could be done.

Engine 2 was located at hydrant No. 6 and stretched a single line into building A, using a 1¼-inch tip and made quick work against the fire in the laboratory. This stream kept in operation in building A until several of the men collapsed from gas and the company had to retreat. Gas had apparently gone to the upper floor as well; there was an open stairway leading to the upper floor from the ground floor in building A.

It was subsequently discovered that the large quantities of ammonium nitrate stored in building A was giving off what is commonly known as "laughing gas."

The remaining members of this company continued to operate from the street into building A.

Engine 3 connected to hydrant No. 7 and stretched a single line by ladder to the second floor of building A, operating from the ladder and taking no chance on going into the building. Fire at this time was burning quite briskly in on the second floor of building A and it required the attention of this line (using 1¼-inch nozzle) to stay the progress of the fire.

Hose Co. No. 1, upon rolling in, stretched a second line from engine 1 at hydrant No. 1 into building B, going by ladder to the second floor which was now well ablaze.

The Battalion Chief in charge of the first alarm assignment at this time concluded that the task was too much for the first alarm apparatus and transmitted a second alarm.

It was shortly after transmitting this alarm that the great flare occurred from building C, sending white hot flames out onto the street. So intense was the heat that the men operating the two lines from Engine Co. No. 1 had to drop their posts and retreat to safety. This threw the two lines out of service temporarily.

Put Heavy Streams in Operation.

Members of the hose company withdrew the lines by pulling them back toward the engine, although the heat was so intense that it was almost unbearable to the men at Engine No. 3. The lines, however, were eventually brought back to a point of safety and the men operating these lines rejoined their com-

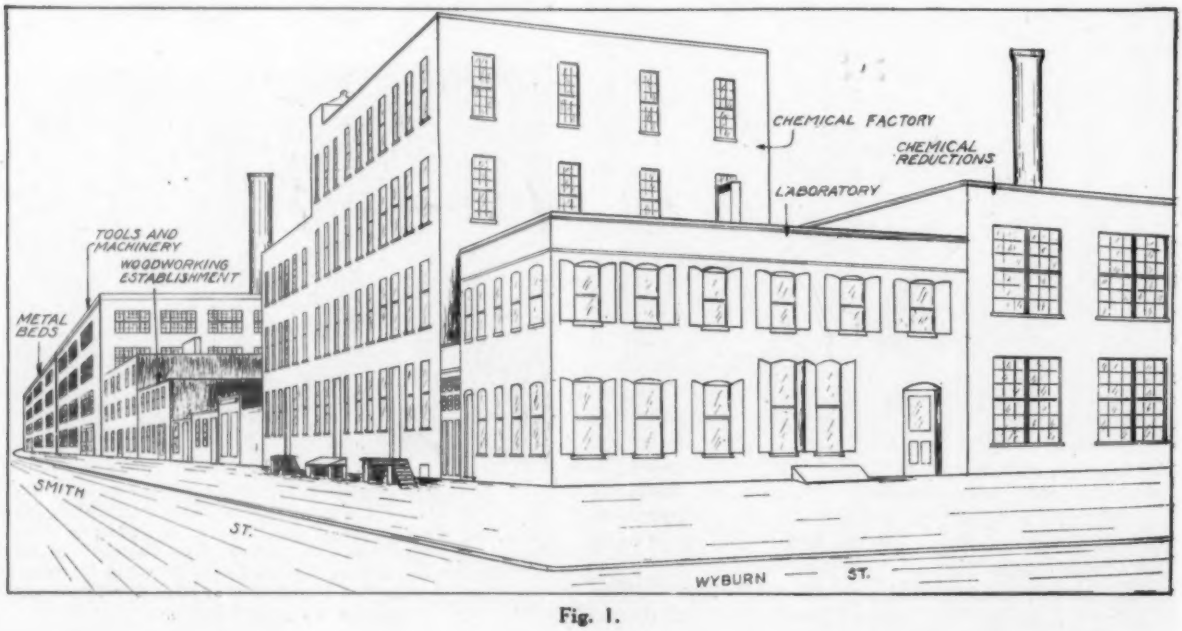


Fig. 1.

pany and put the lines in operation to cover the sash and door factory as well as wet down as best they might on the fire.

This is the point at which it is absolutely necessary that heavy streams be put in operation. Place wagon from Hose Co. No. 1 on Jay Street near the northeast corner of the sash and door plant. Stretch two lines from Engine No. 1 to this deck gun and get in operation at once. The stream should sweep down the front of the sash and door plant and alternately operate on fire in building C.

Stretch second line from Engine Co. No. *2* and operate on fire in building B.

Stretch second line from Engine Co. No. 3 at hydrant No. 7 and operate in building A.

Shift lines from Engine Co. No. *2* operating in A to operate

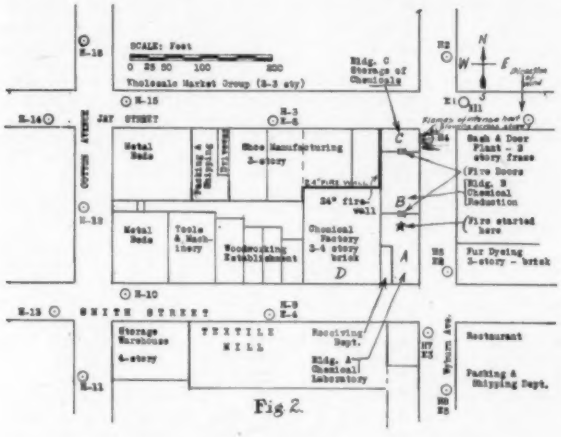


Fig 2.

into B so that two lines will be operating in building B and two in building A.

Assign Second Alarm Companies.

Response to second alarm is as follows:

Engine Co. No. 4, tractorized steamer having wagon with deck gun; Engine Co. No. 5 having triple combination car; Hose Co. No. *2* having automobile combination chemical and hose car with deck gun.

Ladder Co. No. 3, city service truck; Ladder Co. No. 4, city service truck.

Assignment of apparatus from second alarm would be as follows:

Engine Co. No. 4 at hydrant No. 2. Stretch two lines to deck gun placed on Jay Street near northeast corner of building C—but far enough away to permit men to operate satisfactorily on this deck gun. The stream from this gun to be operated into building C to wet down as much as possible and at the same time assist in covering exposures of the sash and door plant.

Engine Co. No. 5 to be placed at hydrant on Jay Street just east of Wyburn Avenue (shown but not labeled in Fig. 2).

This engine company to stretch two lines into second floor of sash and door plant and using these two lines siamesed into large nozzle operate across Wyburn Avenue into building C or B as required.

At this point it should be mentioned that ladder companies are to assist in whatever manner possible in opening up and getting lines in operation.

They are also to survey adjoining buildings from basement to roof to make sure that fire is not extending.

Upon inspection of the basement of building B they will discover that fire is about to enter into this building from building A.

Upon discovering the fire entering basement of building B, this information will warrant the immediate assignment of line to cover this basement. This line will be secured from Hose Company No. 2, stretching from hydrant No. 9. Hydrant pressure of 50 pounds will be satisfactory to furnish a stream for use in basement of building B.

Thorough ventilation of this building as well as other buildings is absolutely essential and this should be taken care of by the first ladder companies on hand.

The thoroughness of ventilation will determine the effectiveness of the fire department in operating on this fire.

The presence of dangerous gases as fire increases in intensity will make it impossible for men to enter any of the buildings safety; hence early ventilation, and thorough ventilation, is absolutely essential.

At this point the chief officer will be at hand and if progress is not being made in holding and extinguishing the fire then a third alarm will be necessary.

Assignment of Third Alarm Companies.

It is likely, judging from the progress of the fire, that such an alarm is needed and in that case the assignment of apparatus on the third alarm will be as follows:

Engine Co. No. 6 at hydrant No. 8 stretching a single line along Wyburn Avenue to assist in covering sash and door plant and in operating in building B.

Engine Co. No. 7 to be placed at hydrant No. 3, and a single line stretched to operate from Jay Street into building C.

Engine Co. No. 8, to be stationed at hydrant No. 15 and a single line stretched to operate on fire in building C or, if necessary, to operate on sash and door plant to prevent ignition of this building at the corner of Jay Street and Wyburn Avenue.

With heavy streams in operation on the fire in building C, it is likely that the intensity of the heat will be deadened appreciably. And if this building has been properly vented at the top the heat will go upward rather than across Wyburn Avenue.

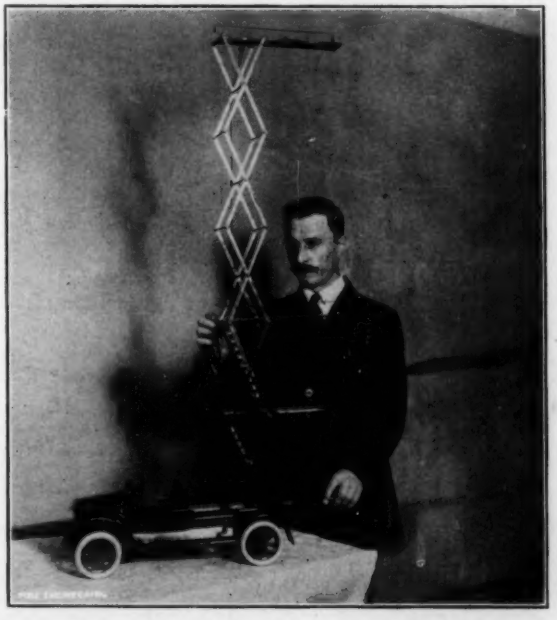
It is questionable, however, whether it will be possible to ventilate this building due to the terrific heat and the extreme danger of men operating on the roof of the building.

If venting has not been accomplished before the flare occurs then it is unlikely that it can be accomplished at all.

In such case the chief concern is to prevent the flare from igniting the frame sash and door plant across Wyburn Avenue.

The fire wall between the shoe factory and the buildings surrounding it will retard the progress of the fire for a considerable time—in fact the actual fire showed that the wall was a barrier which held even though the fire was practically permitted to burn itself out.

To sum up this problem, heavy streams with great carrying power are the most effective weapons available for the fire department. The great volumes of water discharged by these larger streams will deaden the fire so that its likelihood of extending to exposed buildings will be very much diminished. At the same time the greater range of the heavy streams will make proper covering of exposures possible.



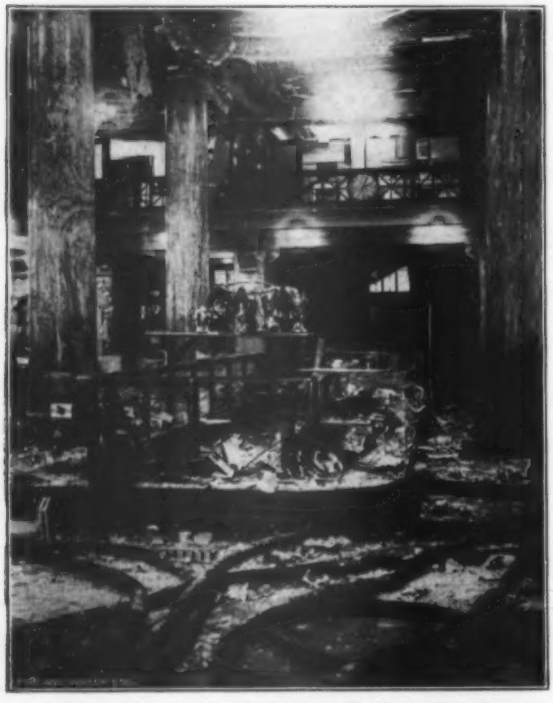
This Aerial has Platforms for Quick Rescue

Model of a newly invented aerial truck which is constructed with platforms to aid in the quick rescue of persons in case of fire. The platforms can be stretched to the windows of each floor of the building on fire, being attached to the double pantograph frame which extends the rescue portion of the device from the truck body. The inventor, A. L. Sieber, of Brooklyn, New York City, is shown beside his truck.

HOW AN EXPLOSION WRECKED OFFICES OF A GAS COMPANY

Disastrous Effects of Blast, Probably from Illuminating Gas—Three Lives Lost and Many Injured

THE disastrous effects of an explosion, probably of illuminating gas, are well illustrated by the picture shown herewith. The blast occurred in the building of the Laclede Gas Company, at St. Louis, Mo., a couple of months ago, and caused the loss of three lives and injury to 51 persons. The intensity of the



Courtesy, St. Louis Globe-Democrat.

Wreckage in the Office of the Laclede Gas Co., St. Louis, Mo., Following a Terrific Explosion.

explosion is shown by the widespread damage to the interior of the structure. Practically all of the furniture and fixtures in the main office were destroyed, even the ceiling being shaken down. The illustration shows the main office and salesroom of the company on the ground floor. The time of the explosion is fixed by the clock shown in the balcony railing, which stopped at four minutes past 2 o'clock.

There was some doubt as to whether the initial explosion was caused by the ignition of leaking illuminating gas or the blowing up of several ammonia tanks situated in the basement of the ten story building.

Fire followed in the wake of the explosion, the flames shooting up a freight elevator shaft to the tenth floor where it did its greatest damage before under control one hour and a half after the blast. The 400 persons employed in the building were thrown into panic, and many were more or less injured by flying debris or overcome by the fumes.

Ammonia was kept in the basement to supply ice-making machines, while there was a quantity in pipes from a refrigerating plant for cooling purposes. W. J. Coates, in charge of the pipe line department of the St. Louis Refrigerating and Cold Storage Company, testified that there was no ammonia tank in the building large enough to cause such damage, and there was no ammonia tank connected with the company's system, which runs a pipe line from its refrigerating station at the foot of O'Fallon street. "I understand the Laclede Company has been demonstrating small ice machines for home use, and these are operated by gas," Mr. Coates said. He explained that ammonia, even under moderate pressure, such as is employed in the water cooling system, is not combustible, much less explosive, but that in combination with fuel gas it is highly combustible. Thus, the force of the first explosion released both ammonia gas and fuel gas, according to his explanation of the probabilities, and this in turn disrupted the much larger supply of ammonia gas in the water cooling system, producing the blast which caused the disaster.

The fact that the inspector of the St. Louis Refrigerating Company was at his work in the building when the explosion occurred, caused Mr. Coates to doubt whether the water cooling system was at fault.

Kalamazoo has Epidemic of Church Fires

A series of church fires which have visited Kalamazoo, Mich., in the last three months culminated on Saturday, March 13, in the destruction of the First Methodist Church and the death of two of Kalamazoo's best known firemen.

This series of fires includes the destruction of the First Congregational Church, Park and Academy streets, on December 29 last, with a loss estimated at $175,000. It also includes a lively blaze at the East Avenue M. E. Church two weeks previously.

This First M. E. Church was located at Lovell and South Rose Street, within a block of Central Fire Station. The fire was discovered by members of this station at about 6 o'clock p. m., who responded promptly with their apparatus. The building was already enveloped in dense smoke and the fire burst through the roof before this company had scarcely got into action. Additional alarms by Chief Russell promptly summoned the entire fire department, composed of six engine and two truck companies.

Plenty of two way hydrants were available, with good water pressure and more than a dozen lines were soon at work. No hydrant streams were used as the six pumpers were all put into action, while about 7,000 feet of hose were laid. Within a half hour, however, the roof fell in and the department began to close in on the fire. Two lines were taken through the front entrance and the men had worked into the auditorium but a few feet, when, with but an instant's warning, the north balcony of the church crashed down upon them. Part of the men were able to jump clear of the falling debris, but John Morren, of Engine 5 and Claus Slater, of Engine 1, did not have time to escape

Kalamazoo Church Fire Which Resulted in the Death of Two Firemen.

and were buried under tons of brick, etc. Relief parties were immediately put to work but it took more than an hour to extricate the bodies.

It is believed that the fire was caused either by defective wiring, or from the heating plant. The monetary loss will reach around $100,000.

EARL VAN HUYSEN.

Firemen Given Police Authority—Ten members of the fire preservation bureau of Indianapolis, Ind., have been given police powers by the board of Public Safety.

COURSE OF INSTRUCTION IN FIRE PROTECTION

AS GIVEN AT THE UNIVERSITY OF ILLINOIS

EXIT FACILITIES

By JOHN PLANT,
Fire Prevention Bureau, Chicago

THIS eighth installment of the University of Illinois Course in Fire Prevention continues the discussion by Mr. Plant of the enclosed stairway as a substitute for the dangerous ladder and balcony fire escape and the lessons various fires have taught as to the necessity for proper facilities for quick and safe exit from burning structures:

There Can be Fires with Fire-proof Construction

Fire-proof construction does not mean safety from fire, that there cannot be a fire if the building contains combustible contents, and the building does not have to be heavily loaded with combustible contents either. Our building code is based on records of fires and loss of life, running up into the hundreds, especially among factory workers, girls and women; yet we have not been able to sell the law makers in our city the necessity of enclosing stairways.

As a sample of what an enclosed stairway accomplished, let me cite the following: The Burlington building is a fine type of fire-proof or fire-resistive construction. By the use of that term I do not mean you cannot have a fire, but it is as fine a type of building as can be found anywhere. It is superior to the requirements of the city code and I believe to the National Board code on building construction. Why is it superior? Because all stairs and elevator shafts are enclosed in walls and masonry and all doors are metal doors. It was used as an office building. It had exterior windows fronting on the east and north streets. The windows were of ordinary wood sash and glass. The exposure from the neighboring fire was not severe, because the street on the east was 88 feet wide and for a distance of 110 feet the building was exposed by a two-story building and only by a six-story building for a distance of about 60 feet. Thus its total length was 170 feet, for 110 feet it was exposed by a two-story building and for 60 feet it was exposed by a six-story building, across an 88-foot street. The wind was blowing from that direction. Had the Burlington building been subjected to a severe exposure and its stairs and elevator shaft not been enclosed in masonry, I fear there would have been floors falling in that structure.

The fire department entered and used the stairs from the ground up. The standpipe equipment was not in the stairway as it is now. We learned something at that fire, namely, to have all standpipes in the stair towers. The fire department is never called when things go as they should. When the finest type of building was being consumed by fire, then the fire department was called. Did they put the fire out? No. They were fortunate to stop the fire in the building. There were defects not observed before the fire. When the firemen did get to the open floor, they found the standpipe was inside a cabinet and the hose connection was so close to the ceiling it could not be reached. When they did get the hose on the standpipe the opening on the standpipe went to the side of the hose cabinet, which caused the hose to kink and little water would flow through the hose. The boys then filled the cuspidors with water and threw the water on the burning window sash, trying to prevent the fire from entering.

Those are the facilities given the fire department to fight the fire that never was supposed to happen in the Burlington building. There are many other exposures in other cities far greater than the exposures around the Burlington building.

Then there is the matter of elevators being considered as a means of exit. Not from our experience! They had a fire pump in the Burlington building, which our men state did not operate. It is alleged that when the fire started the engineeer had gone for a sandwich. Perhaps the elevator operators will go to eat when the fire starts, so you cannot count on the elevators.

Lessons of the Dunning Fire

They had a fire at the Dunning institution and a little nurse girl told a world of facts concerning it. This little nurse girl said three things. This was a one-story frame building. It covered a large area and was an L-shaped building and over it all an attic. They did not have even a pine partition for a fire stop. Exit facilities in a one-story building? They could have stepped from the window out on the ground. The doors opened inward. All exit doors should open outward. The little girl said this: "No one thought it would come so fast." Next she said, "The lights went out." The lights always go out. The next thing she said, "The place filled with smoke and gas." There were the first three things; no one thought it would come so fast; next, the lights went out and finally the place filled with smoke and heat. Twenty-four people lost their lives and they were not helpless people either, but in full possession of all their mental faculties. They were epileptics, that's true, but in possession of all faculties except during a period of mental stress.

In the Iroquois fire they tell you the people died because exit doors were locked, but if other things were done that should have been done, the exit doors could have been locked and the people could have watched the material on the stage burn. The Iroquois theater did not burn, the contents on the stage of the theater burned and the heat, the smoke and the gas going out into the auditorium did the damage. Many people never left their seats at all. What difference did exit facilities make to those people? Loss of life in a theater has always occurred where up to fifteen feet of open space around the building was provided. When the fire starts the probability is it is not going to give the occupants of the building a chance to get to the exit space.

Proper Exits for Public Places

In the inspection of places of public assembly it is not unusual to find exits locked or obstructed. When we happen to see a few people standing in the aisles it is not considered a great hazard, but when we see doors put in as means of egress barred and bolted or loose obstacles in the aisles or passageways for people to trip on, we see that it is rectified immediately.

In our city it is provided by city ordinance exits must be kept free and no one shall be permitted to stand there, but before the exit facilities come, take the other steps to eliminate the possible chance of a fire by having the known causes of fire safeguarded. Eliminate from the theater stage the chance for the fire to start by having the scenery fireproofed before it is used. Provide a stage vent to permit the immediate escape of smoke and gas. Provide a steel curtain to separate the auditorium from the stage. Provide automatic sprinklers and give the people a chance to use the exit facilities provided by the architect.

We do not always do things right in a big city. Size sometimes is our only claim to fame. Many small towns have good ideas in their fire departments that could be profitably adopted by the larger cities.

New Seagrave 1,000-gal. pumper recently purchased by the fire department of Centralia, Wash. The apparatus was tested by the Washington Surveying and Rating Bureau and successfully passed all tests. It has been placed in service by Chief Fred B. Wilcox.

New Boston Fire Station Opened

The new fire station for Engine Company No. 21, of the Boston Fire Department, situated at the corner of Columbia Road and Annabel Street in the Dorchester district, was completed and placed in service late in February.

The apparatus consists of a 750-gallon American-LaFrance with a tiled roof. Mulhall and Holmes prepared the plans and Archdeacon and Sullivan were awarded the building contract.

The apparatus consists of a 750-gallon American-LaFrance

New House for Engine 21, Boston Fire Department

motor pumping engine and a Seagrave combination chemical and hose car. The automobile of Chief Daniel F. Sennott will also be kept at this house.

The officers of Engine Company No. 21 are Captain Frank G. Avery, Lieutenant David F. Sheehan and Engineer Eben C. Lothrop.

The building is two stories in height with a tower at one end which extends a story and a half above the roof. The apparatus floor is spacious with two large double doors. On the second floor are the officers' rooms, lockers, recreation and smoking room, and dormitory.

HARRY BELKNAP.

Massachusetts Chiefs Meet

The March luncheon and meeting of the Fire Chiefs' Club of Massachusetts was held in Young's Hotel, Boston, Mass., on Wednesday, March 17. President William F. Daley, chief of the Brockton Fire Department, presided.

The topic for discussion was as follows: "What changes in design and construction of automobile fire apparatus are necessary in order to make such apparatus dependable for fire protection in the state of Massachusetts during all seasons of the year?"

It was the opinion of the chiefs that while the use of motor fire apparatus has become quite universal, it cannot, as now constructed, be depended upon during the winter months to afford fire protection in some of the cities and many of the towns in Massachusetts.

Captain Charles P. Beaupre, of the State Police Patrol, delivered an address on the subject of "Cooperation of the State Police Patrol with the Fire Departments in the Small Towns of the Commonwealth."

Refuses Petition for More Officers

Fire Chief John Kenlon of New York in a recent statement made to the members of the Board of Estimate in the City Hall, declared that it was not additional chief officers that were needed but additional firemen that were needed, when Mayor Walker asked him if he approved the petition of ten Captains for promotion to Battalion Chief.

The petitioners had been seeking promotion for several months on the ground that some of them were acting as Chiefs of Battalion and that there were always sufficient vacancies due to illness, vacations and special leaves, to warrant the appointment of ten additional battalion chiefs.

Chief Kenlon declared that if the Board of Estimate was disposed to grant additional strength to the fire force that it do so by adding more firemen. He said the department could very easily use three hundred or five hundred firemen right away. The Board of Estimate thereupon ordered "filed" the petition for more chief officers. Nothing, however, was done with the Chief's suggestion for more firemen.

The New York Department loses the services of approximately five hundred firemen a day, so far as fire duty goes. There are two hundred firemen daily detailed to the theatres in New York at night time and on Wednesday and Saturday afternoons. To this could be added about two hundred more out of quarters on company district inspections and surveys in the day time only. There is another hundred otherwise detailed, due to illness, light duty, injuries or other infirmities which make them a loss to the fire fighting force.

Proportionately, the ranks of the blueshirts are badly out of step with other ranks, as to gains in numbers during the past eight years. For instance:

Title	1918	1926	Increase
Chief	1	1	0
Deputy Chief	16	29	13
Battalion Chief	46	86	40
Captain	302	309	7
Lieutenant	433	504	71
Fireman	3,856	4,894	1,038
Engineer of Steamer	490	303	187*
Pilot	22	24	2
Marine Engineer	6	3	3*
Chief Medical Officer	1	1	0
Medical Officer	9	8	1*
Chaplain	4	4	0
Chief of Construction	1	—	—
Veterinarian	1	—	1*
Net increase			979

Chief of Construction was lost as to title only, the incumbent now being carried in the ranks of deputy chiefs.

W. J. DALY.

*Denotes Decrease.

Driving Burning Oil Back With Stream

One of the most dangerous features in connection with operating at large oil fires is the possibility of tanks rupturing and streams of oil being sent forth.

In many cases the rupture of a tank is so large and volume of oil so great that firemen have to beat a hasty retreat in order to save themselves.

One notable example of such an occurrence happened in Philadelphia a few years ago when a large tank gave away. The firemen had to drop everything and flee for their lives.

The illustration herewith shows a recent large oil fire at Long Beach, California.

At this fire two workers were injured and property valued at nearly half a million dollars was destroyed. The fire followed a gas explosion in the oil field. The blast came two hours after a new well had been brought in. Every available piece of fire fighting equipment in the Long Beach department was rushed to the scene.

The picture shows very clearly how the fire department had

Streams in Operation at Long Beach Oil Fire.

to direct streams along the street in order to check the advance of burning oil.

The stream to the extreme left is being directed along the street and the center stream likewise. At the same time additional streams were used to wet down combustible structures in the immediate neighborhood to prevent ignition due to radiant heat.

Palmyra, Pa., Installs New Signal—A new fire alarm signal has been installed in Palmyra, Pa.

WITH THE EDITOR

Where Compulsory Fire Fighting is Warranted

Recently a large brush fire in Gippsland, Australia, caused the death of 32 people. The fire traveled so quickly that no organized effort was made to fight it. Instead of making a stand, the people who were in the path of the fire fled to safety and as a result the fire increased in proportion until a large area was swept over. Nearly 1,000 people were left homeless, and large numbers were injured by fire outside of the 32 who lost their lives.

An event of this sort emphasizes the wisdom of making service compulsory for those requested to give a hand in combating brush or forest fire. Some states have already enforced such laws and they have proven very effective.

New Jersey has statutes on the books which make it obligatory for those impressed into service by the state police and fire wardens to fight brush and forest fires. Last summer three citizens of New Jersey were fined $10.00 each and costs by a Justice of the Peace for refusing to assist state police and fire wardens when they were called on to fight a forest fire that menaced Hammonton and nearby communities.

When able-bodied citizens do not volunteer to assist in combating the common enemy, fire, where it is spreading and promises to attain disastrous proportions, compulsory service is as fully justified as compulsory military service in the event of national danger.

It Must Come

The terrific automobile congestion in the theatrical district, particularly after business hours when cars are permitted to park on the various streets, will be, in the opinion of Chief John Kenlon of the New York Fire Department, the cause of a great catastrophe sooner or later.

It is practically impossible for fire trucks to find their way through this congestion, particularly during theatre hours and in the event of an emergency call for a fire in a theatre building little help could be expected within the period usually taken to answer fire alarms in other sections of the city.

The Board of Standards and Appeals of New York City recently voted down by a 3 to 2 vote the granting of authority to a private corporation to build a seven story parking garage in the theatre district. The chief complaint against such a structure was voiced by property owners in the neighborhood who did not like to have a garage building erected in that section.

Chief Kenlon put up a vigorous fight to have permission granted, basing his arguments on the relief which it would afford to these congested streets.

As in past instances, Chief Kenlon has here shown that he is away ahead of his associates when it comes to determining the course which must be followed in remedying troublesome situations.

Not only is Chief Kenlon absolutely right in his contentions, but buildings in which cars may be parked must come and come quickly. Few men have greater foresight in the matter of safety to life and property from fire than has Chief Kenlon. Every move that he has endorsed has proven itself sound and although he antedates the majority of city officials when it comes to submitting constructive ideas he has rarely had to make an amendment to any plan he has suggested.

Fireproof buildings for the parking of cars are needed, and, as time goes on, will be become more and more urgent. They represent the safest and most practical solution to the rapidly growing problem of congested streets.

Parking garages must come! And let us hope that Chief Kenlon gets the co-operation and support which he deserves in making possible this innovation which will do so much toward alleviating the traffic situation, particularly in theatre districts.

Check Fire by Automatic Vents

The pipe shaft through which fire traveled from the third floor to the thirty-fifth floor of the Equitable Building at the recent blaze in that so-called fireproof structure ran from the second sub-basement to the top of the building. It was roofed over at the top except for a hooded metal vent two feet in diameter and a four by five foot metal louvre. The shaft itself was twelve by twelve feet. The metal louvre had a swinging sheet metal shutter operated by a chain located inside of the shaft at the top floor level, arranged so that the louvre could be entirely closed.

It was therefore not operable from without but was controlled entirely from within the shaft.

In its conclusions on the report of the Equitable fire the New York Board of Fire Underwriters stated: "Shafts of any nature that extend through a building should at least be closed at their lower extremity and should not be roofed over with any material that will not readily vent the shaft in case of fire. Insufficient vent area at the top of a shaft invariably causes fire to mushroom and find its outlet at some lower point."

This is a somewhat tardy recognition of a point that has been held for years by officers of the New York Fire Department.

Deputy Chief Thomas F. Dougherty, recently Acting Chief of the New York Fire Department, has on numerous occasions pointed out not only the advisability but the urgency of covering all such shafts with automatic vents.

As one of the earliest advocates of venting at fires, Chief Dougherty has given wide study to the subject and long ago reached the conclusions that the most effective means of preventing fire from mushrooming from a shaft into the various floors of a building is by providing ventilation at the top of the shaft. He considers, and wisely so, that the venting area should be equal to that of the shaft. Any constriction in area at the ventilator means creation of pressure due to the rising heat and gases with a consequent banking up of these heated gases, and possible mushrooming.

Had the shaft at the Equitable Building been equipped with an automatic vent, having an area equal or nearly equal the area of the shaft, this vent, opening shortly after the first rush of heat upward, would have kept the shaft free of high temperatures and at the same time prevented the entrance of fire on the 35th floor.

The effectiveness of ventilation depends entirely upon the promptness with which it is provided. Once fire has mushroomed on the floors of a building, due to absence of ventilation, the benefits from ventilation are very much diminished.

Providing of automatic vents should not be confined to the taller structures nor to those classed as fireproof or semi-fireproof. Ventilation is just as important from a property standpoint, and more so from a life safety standpoint, in old tenements.

In the old type tenement, with combustible stairway and open stairwell from ground floor to roof, life is almost invariably lost on the top floor. This is due to the accumulation of heat on the top floor, due to its inability to pass out through the roof to the atmosphere. To do effective life saving work it is usually necessary to open the roof up at once to clear the halls of the intense heat and make it possible for firemen to enter, as well as the occupants to live until rescued.

In this type of structure the progress of the fire is usually as follows. Originating either in the basement or under the stairway on the ground floor it quickly spreads up the stairwell, thereafter reaching the top floor. There it banks up and the tenants on the top floor either hear the fire burning or are awakened by smoke, or noise incident to discovery of fire from without. Immediately they step to their doors, opening the same. The pressure which exists in the pocketed space on the top floor in the stair hall causes a rush of flames into any room when a door is opened. A person arising at night, robed in thin garments and possibly but half awake, upon opening a door and struck with a rush of flame is either panic-stricken or forced to retreat without closing the door. This is the way in which loss of life usually occurs.

Now if these stairwells were properly vented with automatic ventilators, the pressure would not build up in the hall, instead, the heat, gases and smoke would be drawn off to the atmosphere through a ventilator and opening a door would not immediately endanger the tenant as in the case where the heat is pocketed in the hallway.

Another point in connection with shafts is that they should extend through the roof to the atmosphere above, having a parapet wall sufficiently high to prevent ignition of the roof from the heat passing through upon ventilating. Termination of a shaft at the ceiling of the top floor, in instances where there are cocklofts, while reducing the life hazard, do not reduce the property hazard as much as they would if passed through the cockloft to the atmosphere. This is readily understood when the action of fire in spreading through cocklofts is recalled.

The surest way to effectively reduce property and life hazard in any building is to provide all shafts which pass through the roof with automatic vents, and of sufficient area to prevent creation of pressure at the top of the shaft, and thereby prevent the mushrooming effect so common at present day fires.

Hook and Ladder Truck Used in Great Chicago Fire 55 Years Ago, and Recently Returned to Chicago by Mobile

The accompanying illustration shows a relic of the Chicago fire department more than half a century ago. As a hook and ladder truck it did service in the great Chicago fire of 1871. Later it was bought by the fire department of Mobile, Ala., where it was for many years the pride of Franklin Hook and Ladder Company No. 3. It did its last duty in 1900, when it was driven through the streets of Mobile by Gus Rehm, now chief of the fire department of that city. The ladders were destroyed in the Cotton Exchange fire which occurred in Mobile many years ago. The truck has been sent back to Chicago where it will be placed in a museum as a relic.

Fined for Not Seeing Fire Hose

For driving over a fire hose in South Anniston, Ala., a motorist was hailed before the police court justice.

"Judge," he said, "I have lived in the country all my life, and I never saw a fire hose before." He thought a pipe was laying in the road and therefore he believed that he was in his right in driving over it.

"Five dollars and costs," said the judge.

New Fire Station for Napa, Cal.—The contract has been awarded for the construction of a new fire station in Napa, Cal.

QUESTIONS AND ANSWERS

Conducted by FRED SHEPPERD, B. Sc., M. E.

"He that questioneth much shall learn much"—BACON

NOTE—Readers of FIRE ENGINEERING are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified.

A Water Tower Problem

To the Editor:

Recently, during a discussion of Fire Department Hydraulics, the following problem was proposed for solution:

Four engines are working into a water tower, one through 250 feet of 2½ inch hose, one through 300 feet of 2½ inch hose, one through 350 feet of 2½ inch hose, and one through 400 feet of 2½ inch hose. The tower is fully extended, and a 2 inch tip is used. A nozzle pressure of 90 pounds is required. What is each engine pressure?

In scanning my list of hydraulics problems, made up of problems which have appeared in FIRE ENGINEER, Fire Engineering, Fire and Water Engineering, and Simplified Fire Department Hydraulics I have failed to find a like problem.

In arriving at a solution I have been guided by the solutions given in solving Class II problems in Simplified Fire Department Hydraulics. On the attached sheets I have attempted to explain each step as is worked, with comments on the work of each step.

Would you kindly give this a few moments of your attention and criticise the work as you may see fit, and give your opinion as to a correct solution?

Possibly the problem may be of interest to other readers of your paper. I would appreciate hearing comments from firemen of more experience than myself as to how they would proceed with the work, either through the columns of your paper or through personal correspondence, and if any are received I will be very glad to exchange views on this problem or any other which may be contributed.

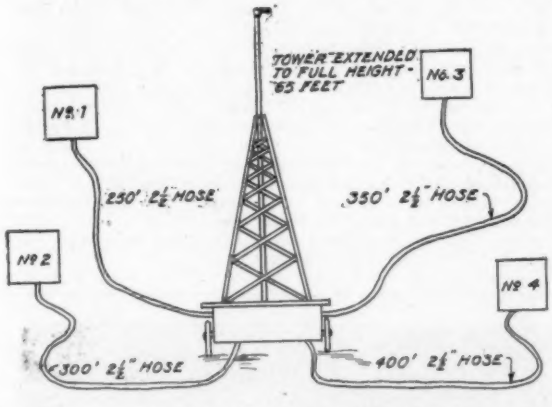
Thanking you for past favors, and with best wishes for the new publication, FIRE ENGINEERING, I am,

Very respectfully yours,

DONOVAN D. ANDERSON.

1635 No. Tripp Ave.
Chicago, Ill.

Question: Four engines are working into a water tower, one through 250 feet of 2½ inch hose, one through 300 feet of 2½ inch hose, one through 350 feet of 2½ inch hose, and one through 400 feet of 2½ inch hose. The tower is fully extended, and a 2 inch tip is used. A nozzle pressure of 90 pounds is required. What is each engine pressure?



Solution:

I. Find the pressure required at the base of the tower.
   a. Find the back pressure in the tower.
      Let BP=back pressure in the tower. H=height of the tower=65 ft.; P=pressure per foot=.434 pounds.
      Then BP=H x P=65 x .434=28.21 pounds.
   b. Find the total pressure at the base of the tower.
      Let P=total pressure required at the base of the tower; BP=back pressure in the tower=28.21 pounds; NP=nozzle pressure=90 pounds; FL=friction loss in the tower=25 pounds;
      Then P=BP + NP + FL=28.21 + 90+25= 143.21 pounds.

Obviously this pressure, 143.21 pounds, is the pressure required on each hose line at the base of the tower.

II. Find the discharge from the tower nozzle.
   Let D=discharge in gallons per minute from the tower nozzle; d=diameter of tower nozzle=2 inches; P=tower nozzle pressure=90 pounds;
   Then $D=29.7 \times d^2 \times P=29.7 \times 2^2 \times 90=1126.22$ gallons per minute.

This is the total discharge from the four engines.

III. Reduce the four 2½ inch lines to a single 2½ inch line.
   a. Find the average length of the four 2½ inch lines.
      Let AL=average length of the four 2½ in. lines.
      Then AL=(250 + 300 + 350 + 400) ÷ 4=1300÷4 =325 feet.

This is the average length of the four 2½ inch lines and is determined through the process of solution as given in Simplified Fire Department Hydraulics for Class II layouts involving siamesed lines of equal size and unequal length. The layout may now be treated as four siamesed lines each of which is 325 feet long.

   b. Reduce the four 2½ inch lines of average length to a single 2½ inch line.
      Let L=length of single 2½ inch line; AL=average length of the four 2½ inch lines=325 feet; C=hose size factor=12.4 for 4 2½.
      Then L=AL÷C=325÷12.4=26.2 feet.

The problem is now reduced to the basis of a Class I problem with a single engine supplying the tower through through a single line of 26.2 feet of 2½ inch hose.

IV. Find the average engine pressure.
   a. Find the friction loss in 26.2 feet of 2½ inch hose.
      1. Find the friction loss in 100 feet of 2½ inch hose.
         Let FL=friction loss in 100 feet of 2½ inch hose; Q=quality of water flowing divided by 100=1126.22÷100=11.26.
         Then $FL=2 \times Q^2+Q=2 \times 126.78^2+11.26=264.82$ pounds.
      2. Find the friction loss in 26.2 feet of 2½ inch hose.
         Let FL=friction loss in 26.2 feet of 2½ inch hose; FL=friction loss in 100 feet of 2½ inch hose =264.82.
         Then FL=(264.82÷100) x 26.2=69.16 pounds.
   b. Find the average engine pressure.
      Let EP=average engine pressure; FL=friction loss in hose=69.16 pounds; P=pressure required at base of tower=143.21.
      Then EP=FL+P=69.16+143.21=212.37 pounds.

This figure, 212.37 pounds, is the average engine pressure, and is equal to the total of the four engine pressures divided by the number of engines, four.

It now becomes necessary to determine some basis upon which the pressure of each engine may be computed. The conditions of the problem name only one condition on which the various engine pressures may be compared, the stretch of hose between each engine and the tower. As all lines are given in the 2½ inch size, the stretches may be compared by the number of lengths in each stretch and the number of lengths in the total layout.

V. Compare each stretch of hose with the total layout.
   The total layout is 1,300 feet, or 26 lengths.
   The stretch from Engine 1 is 250 feet or 5 lengths.
   The stretch from Engine 2 is 300 feet or 6 lengths.
   The stretch from Engine 3 is 350 feet or 7 lengths.
   The stretch from Engine 4 is 400 feet or 8 lengths.
   The stretch from Engine 1 is 5/26 of the total stretch.
   The stretch from Engine 2 is 6/26 of the total stretch.
   The stretch from Engine 3 is 7/26 of the total stretch.
   The stretch from Engine 4 is 8/26 of the total stretch.
   The comparison figures for each stretch will be then as 5/26, 6/26, 7/26, and 8/26. The use of fractions in these

figures is objectionable, and as the denominators of each figure are equal, the figures may be reduced to whole numbers by multiplying each one by 26, which gives as comparison figures the value 5, 6, 7, and 8. The engine pressures will then be as the figures 5, 6, 7, and 8. That is, if the first engine pressure is 50, the second will be 60, the third 70, and the fourth 80, and the sum of the four engine pressures divided by 4 will be the average engine pressure, or 212.37 pounds.

Obviously, the numerical pressures 5, 6, 7, 8, or 50, 60, 70, 80, are not correct, but if a basic pressure is found, the pressure on engine 1 will be 5 times that basic pressure on engine 2 it will be 6 times as much, on Engine 3 it will be 7 times as much, and on engine 4 it will be 8 times as much.

The next step is, then, to find the basic pressure.

VI. Find the basic pressure.

Let X=the basic pressure.

Then 5X=Engine 1 pressure.
6X=Engine 2 pressure.
7X=Engine 3 pressure.
8X=Engine 4 pressure.

And $(5X+6X+7X+8X)\div 4=212.37$.

$26X\div 4=212.37$

$26X=849.48$ and $X=32.66$ pounds.

And $5X=5\times 32.66=163.3$ pounds, pressure on Engine 1.
$6X=6\times 32.66=195.96$ pounds, pressure on Engine 2.
$7X=7\times 32.66=228.62$ pounds, pressure on Engine 3.
$8X=8\times 32.66=261.28$ pounds, pressure on Engine 4.

It will naturally be understood that the delivery from the engines will be different, that most likely Engine 1 will deliver the most water, then Engines 2, 3, and 4, in the order named. Consequently, the computations are not mathematically correct, and neither are the answers, due to the variance in the quantity of water flowing through the lines and the friction loss in each line, but from a review of the solutions of Class II problems, especially those involving lines of unequal length and unequal engine pressures I am somewhat, though not entirely, of the opinion that the answers derived are approximate, and that the solution gives amounts close enough to be practical, and that the work would, if done in an examination, receive a credit mark.

Editor's Comment: Up to the point where the average engine pressure is determined, no suggestions can be offered to improve your solution.

From this point on, however, there is a slight deviation from the usual line of reasoning.

In the calculation of your basic pressure you have assigned to each engine a certain pressure based upon the stretch of hose between the engine and the base of the tower.

Then in solving for the actual pressure you have taken the average engine pressure and from this figure found the proportional pressures at the four engines.

However, in this operation you take into account the average engine pressure, which includes the back pressure and the friction loss in the tower.

And by this method of solution you arrive at an engine pressure for engine No. 4 of 261 pounds as compared with 163 pounds on engine No. 1.

It would have been a better proceedure to apply the figures 5x, 6x, 7x, and 8x to the friction loss from the combined engine to the base of the water tower rather than to the combined engine pressure itself.

Take for example the case where each engine is delivering the same quality of water (although the engine farthest away would normally be expected to deliver less water).

In this instance each engine would be delivering a quarter of 1126.22 gallons per minute or 281.55 gallons per minute.

Now with this flow the friction loss per 100 feet of 2½-inch hose will be 18.8 pounds approximately.

The friction loss from engine No. 1 to the water tower will be 47 pounds; adding this friction loss to the pressure required at the base of the tower, 143.21 pounds will give an engine pressure necessary of 190.21 pounds.

With the second engine the friction loss in the 300 feet of 2½-inch hose will be 56.4 pounds which, added to the pressure required at the base of the tower will be 199.61.

Friction loss from third engine to tower is 65.8 pounds, and adding this to the pressure required at the base of the tower gives an engine pressure of 209 pounds approximately.

By the same reasoning the pressure at engine No. 4 will be 218.41 pounds.

Now notice how these figures compare with the figures you have arrived at. The pressure at engine No. 4 which has a longer stretch is much greater by your calculations than the pressure at engine No. 4 as solved by this particular method. In other words from your method of calculation engine No. 4 would be discharging more water through its line than would engine No. 1 although the latter has much the shorter line.

This is contrary to usual conditions. Hence this particular part of your solution would be considered as deviating too widely from what might be expected.

While it is perfectly possible that each and every engine would be discharging a different amount of water, and while these assumptions could be made in solving the problem, still as long as no engine pressures are given or no quantities of water specified as being delivered by each, the logical solution would be to assume that each was discharging the same amount of water. In this case the solution would be as given in the preceding paragraph.

Nevertheless, the calculations you have submitted show a very thorough grasp of the situation and you are to be commended upon the thoroughness with which you have worked this problem out.

Fitting Bearing With File

To the Editor:

Is there such a thing as putting an over-size bearing in a crank case and using a rat-tail file and ream the hole out, and line it up with the other bearings.

Very truly yours,
D. C. D., Lawton, Okla.

January 17, 1926.

Answer. There is such a thing as putting an undersize bearing in a crank case and reaming it out to fit the crank shaft fairly well, but there is no such thing as lining up properly under these conditions.

Instead of using a rat-tail file, the method of fitting an undersize bearing to the crank shaft where better equipment is not at hand is as follows: the bearing (babbitted) is scraped out with a sharp tool and then the shaft is taken and the bearing portion of it covered with Bavarian blue. Then the shaft is placed in the bearing and rotated. When the shaft is removed the high spots in the bearing are shown by the blue which they have collected from the shaft. The tool is again employed in removing these high spots. Again the shaft is covered with blue and rotated. Then again it is removed and the high spots shaved out of the bearing.

This process is continued until a fairly smooth fit is secured and the bearing surface of the shaft on the bearing is sufficient.

However, in the process of doing this work it is impossible to keep the bearing lined up with the other bearings in the block. This is due to the tendency to shave one side of the bearing lower than the other and instead of producing a well lined up set of bearings it really aggravates the condition.

There is only one satisfactory method of lining up the bearings and that is with proper equipment commonly known as a boring fixture for trueing up main and crankshaft bearings. This machine is fastened firmly to the block and then a grinding wheel is sent through the bearings all at one time. It lines up the bearings perfectly and produces a satisfactory job which will eliminate vibration and other trouble incident to bearing being out of alignment.

It is best that in the event of your requiring bearing work on motor crank blocks that you either have the factory service station do this work or else have a regrinding shop which is fitted with bearing machinery fix up the bearing.

Should you care for names of such regrinders in your state they will be forwarded upon request.

One of three Buffalo-Reo triple combination cars recently purchased by the supervisors of Arlington County, Va. One of these pumpers is stationed at Ballston, Va.; another at Aurora Hills, and the third at Clarendon. The equipment consists of a 300-gal. pump, one steel chemical tank and 1,000-foot hose body.

Foam Handles Big Test Oil Fire

In order to prove the value of the Amdyco foam generator, a pit fifty feet in diameter was constructed at Baltimore, Md., under the direction of Chief Emrich of the Baltimore fire department.

Water was poured into the pit for a depth of six inches. On top of this was emptied 1,000 gallons of fuel oil, 1,500 gallons of kerosene and 250 gallons of gasoline. The fire was allowed to burn two minutes before any foam was applied, and it was entirely extinguished by the foam in 13¼ minutes. To do this forty cans of Amdyco were used, each can containing forty pounds of the powder.

At the start of the test, the generator was operating at 140 pounds pressure and after five minutes operation, it was reduced to 120 pounds. On the intake side, there was 1,100 feet of hose and 150 feet of hose on the discharge side. At the test, the foam line was handled by the Baltimore firemen who previous to the test had no experience with this type of stream.

Respirator for Firemen

A respirator which is both light in construction and easy on the wearer, has been designed for fire department use by Dr. J. Rice Gibbs and is being marketed under the name of "Dont-fear."

This mask is hung around the neck and straps to the head so that it can not unfasten—the buckle which holds it in place permits of quick fastening and releasing. The canister contains a medium which was in use by the United States army and which was tested by the U. S. Bureau of Mines.

In a booklet which the company issued, they warn the firemen against the belief that the respirator is a cure-all. Where the obnoxious gases is of such concentration that a flame is easily extinguished, the firemen should not enter. Smoke and gases in the average concentration met with in fire department work does not, it is added, affect the wearer of this respirator.

School Houses and Their Equipment

The above caption is the title of a 206 page artistically-covered book issued by W. W. LaChance, architect, specializing in school house architecture, with offices at Niagara Falls, N. Y. The knowledge imparted in the book is the result of diligent study and re earch in all the branches of school furnishings and construction in the United States and Canada. It contains a vast library of constructional data that should be of great value to any school board which contemplates the building of new educational structures. The volume is illustrated with photographs of buildings that have been copied from and have become stock plans, all the defects and detail having been rectified. The plans and blue prints are offered by the author for the nominal price of one per cent on the estimated cost of the building.

To Thaw Frozen Hydrant

A simple method to thaw a frozen fire hydrant is to pour sulphuric acid into the barrel of the hydrant through the nipple. In freezing weather it is a good plan to carry a long-neck quart bottle of acid packed in sawdust on some apparatus as an emergency measure.

Report Issued on Equitable Fire

The New York Board of Fire Underwriters has issued a report on the Equitable Building on February 16, in which the conclusions drawn concur with the opinions expressed in a recent issue of FIRE ENGINEERING. The conclusions drawn by the board are interesting because of the thorough investigation made by their engineers, and follows:

It is a tribute to the construction of the building from the viewpoint of fire prevention, that the fire did not attain more serious proportions. The fact is emphasized that security from fire does not alone lie in fireproof construction, but some attention must be given towards making the contents fireproof. Most of the offices contain sufficient combustible materials to cause a very hot fire, sufficient in proportion to entirely destroy or badly damage the furnishings and contents.

The fire brought out the fact that the term "fireproof" has been generally misconstrued. Where combustible material exists there also exists the possibility of fire.

The introduction of flammable material, either in the form of pipe coverings or any other form into a pipe shaft invites trouble, and if ignited may be the cause of a disastrous fire. Shafts of any nature that extend through a building should at least be closed at the lower extremity and should not be roofed over with any material that will not readily vent the shaft in case of fire. Insufficient vent area at the top of a shaft causes fire to mushroom and find its outlet at some lower point.

Single walled metal filing cabinets filled with combustible material affords no protection to its contents. The cabinets in the fire were badly distorted from the heat. In cases where fire did not communicate direct, the heat of radiation was sufficient to destroy its contents.

There is no equipment that will act as a substitute for the human factor, and it is regrettable that the door leading to the shaft on the thirty-fifth floor was left open.

Long Beach, Cal., Has Good Record

The city of Long Beach, Cal., was fortunate during the past year in having the low fire loss for the year of $62,000 for a population of 100,000.

Chief Craw is particularly lauditory in his comments in reference to the fire prevention bureau. The department's first aid bureau has been partly responsible for the record that no bather drowned during the past season.

The matter of the fire department catching up with the growth of the city was brought up at a recent meeting and the matter of the enlargement of the fire alarm system was emphasized. About one hundred more fire alarm boxes, it is believed, are needed. The matter of the construction of additional fire stations is also being considered. Long Beach claims the honor of having the first piece of motorized fire apparatus on the Pacific Coast.

Truck for Grain and Grass Fires

In a letter to FIRE ENGINEERING, Chief O. Z. Bailey of the Oakdale, Cal., fire department, tells of an apparatus he has which is especially designed to fight grain and grass fires. He is able to run it alongside of the flames, playing a stream as he proceeds. The apparatus carries only 250 gallons of water, with a three-inch shut-off. He responds to calls for help fifteen miles away. On one occasion he extinguished a fire that was burning along a six-mile front, with a 250-gallon tank of water. No chemicals whatever are used on these fires. The same engine is used in fighting fires in Oakdale, instead of a chemical apparatus. In case the water in the tank gives out, water is pumped from a city hydrant.

Garl Signal Company Organizes

Formation of a new corporation in Akron, Ohio, to market the Garl fire and police alarm signals for municipalities and industrial plans has been effected. The company, capitalized at $100,000, will be known as the Garl Signal Company, and takes over the good will, basic patents, etc., of the Garl Electric Company.

The Garl system is an invention and development of Manious Garl of Akron, who has been retained as research and engineering chief.

The new company is backed by a number of substantial citizens of Akron, including J. M. Alderfer, President of The India Tire & Rubber Company; S. W. Sweet, N. S. Noble, Willis Bacon and W. G. Lerch.

The Garl System has served the municipalities of Akron, Kenmore, and Ravena, Ohio, for many years, as well as in the factories of the B. F. Goodrich Rubber Company, the Goodyear Tire & Rubber Company, the Pittsburgh Plate Glass Company, the Cleveland Worsted Mills, The Diamond Match Company, and others.

"The Garl patents are basic and provide a system, which is all but fool-proof," says Mr. Bacon. "Years of experience by users prove that the Garl system is the simplest on the market, most economical in original cost as well as maintenance, and thoroughly efficient and dependable."

The offices and factory are located at 61-63 Bartges Street, Akron, Ohio.

MOVE TO CHECK LOSS OF LIFE IN OLD TENEMENT HOUSE FIRES

Bills Now Before New York Legislature Require Old Tenements to be Equipped With Proper Exit Facilities

PROBABLY the most severe life hazard in New York in connection with fires is that found in the old type tenement, or in old residences converted into tenements. This is particularly the case where the interior of the building is entirely of combustible construction.

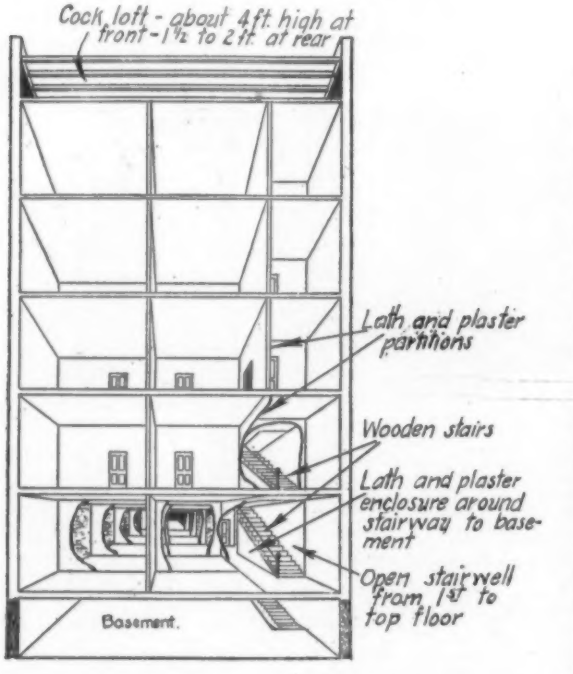
As shown in the sketch herewith there is an opening without obstruction for the passage of flames from the first to the top floor.

And to aggravate the condition for rapid spread of fire, all stair construction is wooden, and frequently the stairs are covered with combustible rugs.

In this type of building fire usually starts in the basement, finds its way to the stairs leading from the basement to the first floor and, due to the thin enclosure around this stairway, quickly burns its way through and enters the first floor.

From that point on the spread is exceedingly rapid.

Numerous lives have been lost in buildings of this type, it


Cock loft - about 4 ft. high at front - 1½ to 2 ft. at rear
Lath and plaster partitions
Wooden stairs
Lath and plaster enclosure around stairway to basement
Open stairwell from 1st to top floor
Basement.

being estimated that 100 lives were lost during the past eight years.

And it is not the fault of the fire department. The damage is usually done by the time the department gets in operation. No matter how quick the apparatus may respond to the alarm the fire is just a little bit quicker, and finding its way to the top floor not only blocks the occupants of this floor from escaping but quickly enters the rooms bordering the stairway on the top floor through transoms, thin doors or even open doors, and the work of destruction is complete.

To remedy this severe situation a movement has been started by Assemblyman S. Hofstadter. He has formulated two bills designed to lessen the danger of these fires and to improve fire escapes with which the old buildings are equipped. His bills require the replacement of the old vertical ladders with which some of the tenements are equipped by modern sloping fire escapes, and they empower the Tenement House Department to order the installation of suitable fire escapes on buildings that have none at all. Further, the bills require the fireproofing of cellar ceilings and cellar stairs and the underside of the first flight of stairs above the entrance hall. They stipulate that fireproof wire glass must be used in all doors opening on hallways.

"These bills would deal effectively with a dangerous condition now existing in the city of New York, brought on by the housing shortage," said Assemblyman Hofstadter in introducing his bills. "Old residence buildings were altered into illegal tenement houses, without being equipped with fire escapes or having proper provision for light and ventilation for rooms and toilets. These buildings were altered under plans filed in the Bureau of Buildings, in which declaration was made that they would not be used for housekeeping purposes. The Tenement House Department is required by law to vacate such buildings if they are found to be illegally occupied as tenement houses. Recognizing the fact that many such houses have been altered and have since changed owners, this bill proposes to give these buildings a legal status and to subject them to the same regulation to which the old tenement houses were subjected when brought under the control of the Tenement House Department in 1901."

The bill requires, however, that all old residence buildings, hereafter changed into residences for three or more families, whether such families do their own cooking on the premises or not, must conform to the requirements of the tenement house law for new tenement houses, or the modified requirements now demanded of buildings converted into what are technically known as "Three Family and Four Family Converted Dwellings."

ALBANY, GA., WINS AWARD AS BEST IN FIRE PREVENTION

Shows Finest Record Among Cities Both Large and Small in United States for Past Year

THE grand prize in the contest conducted by the National Fire Waste Council and the Chamber of Commerce of the United States was awarded to Albany, Ga., for having shown the greatest progress during 1925 in the prevention of fires and in the reduction of fire losses. This is the first time since the inauguration of the contest, that the main prize was won by a city of less than 20,000 population. The award was made from a field of 221 contestants; 183 contestants showed a reduction of seven per cent in loss of life due to fire.

Chief D. W. Brosnan, Albany, Ga.

The presentation of the awards will take place at the annual meeting of the Chamber of Commerce of the United States which will be held in May.

In the class of cities with a population of 100,000 or over, Portland, Ore., was the winner. The standing of the other cities in this class follows in their proper order: Philadelphia, Pa., Wilmington, Del., Reading, Pa., Rochester, N. Y., El Paso, Texas, Indianapolis, Ind., Milwaukee, Wis., Grand Rapids, Mich., Sacramento, Cal., Kansas City, Kans.

In the class, 50,000 to 100,000, Long Beach, Cal., was the winner. The other honor cities follow in their proper order: Fresno, Cal., New Britain, Conn., Charleston, W. Va., Passaic, N. J., Terre Haute, Ind., Hoboken, N. J., Racine, Wis., Pasadena, Cal., Pontiac, Mich., Augusta, Ga.

Battle Creek, Mich., is the winner in the class of 20,000 to 50,000; the others are Petersburg, W. Va., Hagerstown, Md., Findlay, Ohio, Manfield, Ohio, Burlington, Vt., Owensboro, Ky., Butler, Pa., Massillon, Ohio, Fargo, N. D., Fitchburg, Mass.

Albany, Ga., is the winner in the class of 20,000 and under and is also the grand prize winner. The others in this class are Laconia, N. H., San Fernando, Cal., Billings, Mont., Carthage, N. Y., Ashland, Ore., Weston, W. Va., Oceanside, Cal., Lewiston, Mont., Marlow, Okla., and Sebewaing, Mich.

Most of the decline in the fire loss figures came from the cities. According to Prof. C. L. Christie of Purdue University, many of the farm centers show an increase in the fire loss figures.

Ocean City, N. J., Buys Pumper—A combination pumping engine has been bought by Ocean City, N. J. It has a capacity of 1,000 gallons and cost $13,850.

OF INTEREST TO VOLUNTEER FIRE DEPARTMENTS

The Town Auditorium Fire

To the Editor:

I am enclosing herewith a proposition which might be of interest to your readers. It is in the nature of a problem along the line of those you have been publishing in your most excellent magazine. It is one of those "type" problems which is found in almost every community—the public dance and auditorium problem—just as we have the lumber yard and old wooden school house problem. The members of our department believe in fighting all our fires before they occur, by preventing them; nevertheless, if the enemy does steal a march on us, we want to be able to meet him scientifically. As this particular proposition would very likely be of interest to others, I would appreciate it very much if you would give your opinion concerning it in the light of the question submitted in some early issue of FIRE ENGINEERING. Yours truly,

HENRY W. PILCH, Madison, N. J.

The problem:

The fire building is constructed of brick, with wood and plaster interior. Floors, stairways, entrances, auditorium, gallery, etc., are made of wood, much of it heavily varnished, waxed, etc. The building itself is three stories high, with a four foot space or more between the ceiling of the top floor and the roof.

Plan of first floor (starting at the railroad) is as follows: Branch library, vacant space, entrance to upstairs auditorium and offices, tax office, drug store (on corner), cleaning and dying establishment, clothing store, side door to stage upstairs.

Plan of second floor: A broad wooden stairway leads from the downstairs front entrance up to a landing, from where the stairs lead both front and back to the second floor level. Directly above these open stairs are another flight, leading to the third floor offices and balcony of auditorium. At the right of the stairwell on the second floor is a check room, a small hall, a ladies rest room, etc. At the back of the building at the head of the stairs is a men's smoking room and a lavatory.

Fire escapes are situated at the rear of the men's smoking room and outside of the small hall at the right of the stairs. At the head of the stairs at the front of the building are offices, a reading room, etc. At the left is a large auditorium, with two entrances to stairs. At the rear of the building, facing the auditorium, is a stage.

At right and left of stage are dressing rooms, the one at the left communicating with the street by way of a wooden stairway, and also communicating with a space above the stage. This space is open to the cock-loft under the roof, where all the wooden roof beams can be viewed, and also open to the stage as the scenery is hung therefrom. At the front of the building, facing the stage, is a balcony, which is connected with the auditorium floor by means of a wooden stairway at the left end, and which connects with the main hallway at the head of the large stairway on the third floor. At the front and at the right of the stage are trap doors leading to a blind room beneath same.

Plan of third floor: A broad open stairway leads to the third floor landing. At the front are offices, at the left two small halls or lecture rooms, and at the rear are the janitors' apartments. At the left of the building is the auditorium, and a door leads from the stairway to the gallery of same. At the other end of the gallery a small flight of stairs leads to the auditorium floor. The roof of the auditorium is surmounted by a glass dome perhaps six feet in diameter.

A fire starts somewhere above the first floor and has gotten a fair start.

Your apparatus consists of a 1350 gallon pumper, a 750 gallon pumper, a city service hook and ladder truck, and a supply truck carrying extra hose, etc. The 10-inch main on Main Street will supply water at 90 pounds pressure. The hydrant No. 1 has two 2½ inch outlets, as has No. 3 Hydrant; No. 2 has two 2½ inch outlets and a four inch outlet.

(A) How many streams with a good pressure, could be acquired using the above apparatus and hydrants?

(B) How would you connect the apparatus?

(C) If hydrant No. 2 were replaced by a large one with a 6 inch outlet, would the improvement be noticeable?

(D) How would you fight the fire, assuming it had gotten a fair start?

Handling the Fire

This problem is an interesting one in that it covers a typical establishment in almost every town or small city.

The highly inflammable construction, the large number of openings, the absence of fire stops as well as limited fire protection facilities make the problem a serious one.

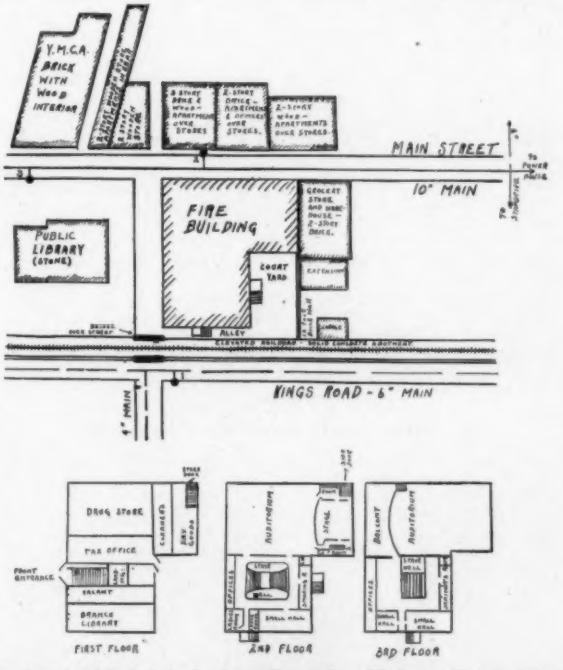
Occurring in a building of this nature and reaching the auditorium, it is going to spread quickly. Streams of good range, and plenty of them, will be necessary to check the fire, due to the combustible construction and the unobstructed pathway the fire will have.

With reference to question (A) it is probable that seven streams would be available with the apparatus and the hydrants on hand to handle this fire—provided there is sufficient water and sufficient hose.

Answering question (B), the 1350 gallon pumper would be placed at hydrant No. 2 directly across from the fire building, if this street is sufficiently wide to prevent damage to the apparatus in case the fire gets away. Judging from the fact that this street is Main Street, it will be assumed that it is of sufficient width to make safe the placement of apparatus at this hydrant. From this engine we would stretch four lines, two of them equipped with 1¼ inch nozzles and the other two with 1⅛ inch nozzles.

It would be preferable to use shut-off nozzles in each case if such are available.

The second engine, the smaller one, would be placed at hydrant No. 3 and two lines stretched to the fire building, each being



equipped with 1⅛ inch shut-off nozzle. Hydrant No. 1, being attached to a 6-inch main, and no reference being made as to how far it is to a cross connection, could be depended upon only for supplying one hydrant stream.

Answering question (C), if hydrant No. 2 were replaced by a large one with 6-inch outlet there would be no particular advantage because the friction loss for a flow of twelve or thirteen hundred gallons per minute is not excessive in a hydrant provided with two 2½ inch and one 4-inch outlets.

There might be a very slight advantage but this advantage would not be sufficient to warrant the change.

As to fighting the fire, assuming it has secured a fair start, the following may be said. First assume that fire has started on the second floor at the most troublesome part, namely, the stage. Assume further that it has fully involved the auditorium and is coming through the doors on both the second and third floor to the offices alongside of the auditorium. It will, of course, be assumed that the fire has not made appreciable progress beyond the auditorium for in such a case there would be little the fire department could do toward holding the fire.

Assignment of apparatus in handling the fire would be as follows:

Ladder company place ladders where required, open up for engine companies and ventilate at once above auditorium and above stage well.

Place the 1350 gallon pumper at hydrant No. 2 as noted above and stretch in four lines. For purpose of identification the two lines equipped with 1¼ inch nozzles will be labeled "a" and "b" while the two lines equipped with 1⅛ inch nozzles will be labeled "c" and "d."

Lines "a" and "b" should be stretched at once to the second floor, opened up and operated into the auditorium through the two doors leading thereinto from the stairwell. These lines, equipped with 1¼ inch nozzles will have sufficient range and volume to deaden the larger part of the fire over the auditorium. It will take some time, however, to cool down the interior of the auditorium so that these lines can be expected to perform other work.

Lines "c" and "d" which are also stretched up the main stairway go to the second and third floor respectively. The line remaining on the second floor operates around the second floor to kill any fire which has started in the offices, smoking room, or other rooms bordering on the stairwell.

The line which has gone to the top floor will wet down there as much as possible and also operate in whatever manner possible to hold fire from coming out into the stairwell on the third floor.

The 750 gallon engine to be stationed at hydrant No. 3 and two lines stretched in with 1⅛ inch nozzles. These lines will be labeled "e" and "f". Line "e" laid to stage stair and stretched up to the stage. The line to operate into the stagewell and do what it can to cool off the fire burning therein. It will be unlikely that this line can handle the situation at that end of the building but it can at least hold the fire while the larger lines are doing their work in the auditorium. Line "f" should be stretched to the third floor by ladder and to operate above the balconies through doors leading from stairwell into auditorium. If necessary this line may assist the line already on the third floor in wetting down and killing the fire which had reached the stairwell or the offices surrounding it.

A single line will be stretched from hydrant No. 1 under the railroad bridge and taken to the roof by the way of fire escape at the rear of the office section of theatre building. This line if possible, should be equipped with bent pipe such as the New York nozzle or even a cellar pipe so that it may operate effectively into the cock loft from the roof. This line may also assist in wetting down in stairwell if opening provides such possibility.

As soon as the large lines operating into the auditorium are free, they can then be directed toward the stage and worked up at a close range.

It is likely, however, that nothing much can be done in handling the stage fire until the auditorium is taken care of.

Proper ventilation will make it possible for the men to enter the second floor and speed up the work of extinguishing the fire.

This assignment of apparatus should be able to hold the fire.

An Appreciation of the Volunteer

There are always many who will champion the cause of the volunteer fireman, and the public is more and more realizing the unselfishness and big-heartedness of volunteer firemen. Chief John F. Bowers has sent in the following clipping which has appeared in the Bellefonte, Pa., newspaper.

Very often we hear the remark: "Where are the firemen?" "Why don't they get here?" To us the query has always been: How do they get to a fire as promptly as they do. As a matter of fact they are under no obligation other than their will to help to go at all. Besides, the critic should remember, if he beats them to a conflagration, that he has only done it because he happened nearby at the time. He loses sight, entirely, of the fact that the fireman may live squares away from his engine house and must run there and thence to the scene of his activities.

We are not appraising their service by comparison with the paid departments of the great cities, nor with volunteer departments in other towns. We are referring to only what we have personally observed and that convinces us that Bellefonte owes more to the splendid spirit of the members of her two fire companies than she has ever stopped long enough to fully realize.

Chief M. J. Allhouse of Gresham, Ore., in defense of the volunteer firemen takes exception to an article which appeared in the December 9, 1925, issue of FIRE AND WATER ENGINEERING in which the statement is made that one paid fireman is equal to eight volunteer firemen. He writes:

"There is no doubt that a paid fireman might or ought to know more about fire fighting than a volunteer fireman, but knowledge alone won't extinguish a fire. Numbers count to help check and extinguish a fire. I have twenty-four volunteer firemen in my company and when it comes to putting out a fire, I have nothing but praise for them. To me they are equal to a like number of paid firemen. Chief Turner, the author of the article in question should not think for a moment that there are not as good firefighters in a volunteer fire department as there are in a paid organization."

Centennial of Hingham Fire Company

The one hundredth anniversary of the organization of Torrent Engine Company No. 2, of Hingham, Mass., was observed recently with fitting ceremonies including a banquet at which many stirring incidents of the old volunteers were recalled by the speakers.

The famous hand tub of the company has now been replaced by a modern gasoline pumping engine and a combination chemical and motor hose wagon has taken the place of the old hose reel of other days.

The oldest veteran of the company is Andrew J. Clark, who

Old and New Apparatus of Torrent Engine Co. No. 2 of Hingham, Mass.

is 88 years of age. The second oldest member is Edward French. Among those taking part in the celebration were Chief Albert T. Brown, of the Hingham Fire Department; Deputy Chief L. S. Leighton, Capt. Alexander R. Lincoln, and Lieut. Robert F. Barrett, Jr.

The ancient hand engine has been kept in first class condition and has made a highly creditable showing whenever it has been entered in musters. An interesting photograph was taken of the old and new apparatus of the company drawn up in front of the fire station.

Originally the company was formed with 22 charter members and after several preliminary meetings in the town hall an old school house was converted into an engine house and the company went into service on February 21, 1826, with equipment considered at that time the last word in efficiency.

Ex-Deputy Commissioner of Brooklyn, Dies

William A. Doyle, formerly deputy fire commissioner of Brooklyn and Queens Boroughs, New York City, died March 24 in the Long Island College Hospital at the age of fifty-eight. Mr. Doyle was very active in the politics of the Democratic party in the city and was a valuable support to the Murphy regime.

He was educated and born in Brooklyn.

Palm Beach Club has Firemen's Ball

All of the social-elect of Palm Beach, Fla., attended the Firemen's ball which was given at the Palm Beach Club on March 17, for the benefit of the newly organized fire company. The guests were attired in gingham dresses and straw hats—the firemen wore the customary blue shirts, blue trousers and red ties.

The fire department was organized several weeks ago by Captain Byron Tate, who served in the Princess Pat's regiment during the war, and who helped fight the Breakers fire a year ago. There are one hundred members in the department in addition to the officers, and it is divided into four sections.

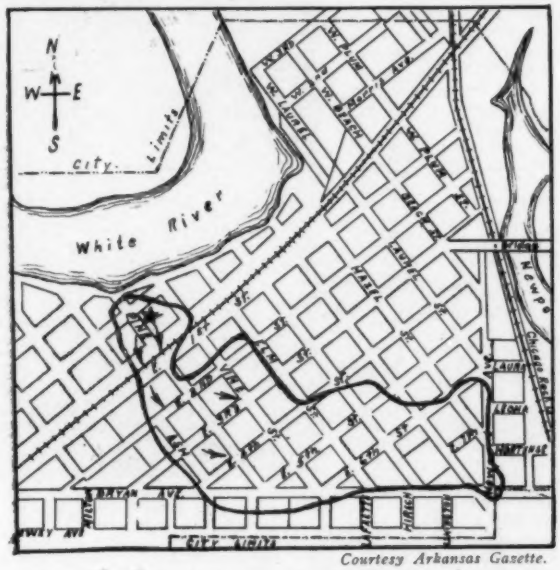
Clear Lake, Ia., Firemen Insured—Clear Lake, Ia., has taken out insurance policies to reimburse the firemen against any accidents which may occur in the performance of their duties.

John Moore Continues Chief at Martins Ferry, O.—The volunteer fire department at Martin's Ferry, O., has reelected John Moore chief, and Frank Harris secretary. The old trustees were also again chosen.

PASS SHINGLE ROOF ORDINANCE WHILE EMBERS ARE COOLING

After 30-Block Fire in Newport, Ark., Legislation Hurriedly Put Through Forbidding Combustible Roofs—Little Rock Assists at Fire

WOODEN shingles were directly responsible for the destruction by fire of 325 homes in the little city of Newport, Ark., many of these the finest in the municipality. After the damage had been done the city fathers hastily met and proceeded to "lock the stable door," passing an ordinance forbidding the use of combustible roofing material on all buildings subsequently erected.



Courtesy Arkansas Gazette.

Map of Newport, Ark. The Burned Section is Enclosed in Heavy Lines. Star Shows Point of Origin and Arrows the Direction in Which Fire Traveled, Driven by High Wind.

The fire originated in a lumber shed at the river bank and quickly spread to a lumber mill adjoining. The wind was of gale proportions and the fire leaped 500 feet over a section house belonging to the Missouri Pacific Railway, and attacked the residential quarter. Here the hundreds of dwellings surmounted by wooden shingle roofs, many old and dry as tinder, made easy work for the flames, and the spread of the fire was with marvelous rapidity.

The map shows the swath that the fire cut in the best home section of the city. It started in the upper left hand portion of the area enclosed in the black line, and swept in the direction of the wind. If the latter had changed during the progress of the fire there is little doubt that the entire city would have gone up in smoke.

A few houses in the burned district still stood as monuments to the foresight of the builders, as in practically every instance these dwellings were covered with non-inflammable roofs.

In describing his experience in going to the aid of the stricken city, Assistant Chief Charles A. Burns, of the Little Rock, Ark., Fire Department, said:

"It appeared to me that after the fire reached the homes, it was everybody for himself. I imagine there was no order, just everybody trying to help himself and save his own property. Roughly speaking, the fire took a swath approximately four blocks wide and eight blocks long."

Chief Burns said that the special train that took the firemen to Newport made the first 21 miles of the trip in 18 minutes. The conductor later received orders not to exceed 40 miles an hour, and the remainder of the trip was made at a slower speed.

On arrival the assistant chief of the Newport department at once took Chief Burns over the burning area in his car and the latter selected a large compress near where the fire originated as his stand. The lumber yard still was burning fiercely in places and with a change in the wind Chief Burns said the compress would have been destroyed.

Three streams were used by the Little Rock pumper to control the lumber yard fire, and after six hours' work this was accomplished. The apparatus was then transferred to the Commercial Hotel, in the business district, which, at three o'clock the following morning, was burning fiercely and still menacing surrounding store buildings, and this blaze was extinguished.

The remainder of the night was spent in guard duty, and at daybreak the company was released by the Newport officials.

Water pressure from the city's water mains was very poor during the afternoon and early on the night of the fire, but was restored to almost normal pressure at the suggestion of Chief Burns. He said that no one had thought of cutting off the water at every house. Burst water pipes in every house destroyed afforded an outlet for the water, and approximately 300 such streams naturally weakened the pressure.

SAVE HAZARDOUS BUSINESS BLOCK IN HIGH VALUE DISTRICT FIRE

Pittsburgh Firemen Have Big Battle in Down Town Blaze—Top Floors of Building Wrecked

AN ENTIRE city block, one of the most hazardous in the downtown business district of Pittsburgh, Pa., was threatened with destruction recently when flames starting from an explosion of some undetermined cause swept the top floors and roof of the three-story brick business block located at Diamond Street and Masters Way causing heavy damage to the building and contents from fire, smoke and water.

A police lieutenant who was standing a short block from the fire, heard an explosion about 9:50 o'clock, and sent in an alarm from Station 54 half a block from the burning building which reached the department at 9:55 a. m. This alarm was quickly followed by the second at 9:59 and the third at 10:03, bringing twelve engine companies, three truck companies and one water tower company, the chief, deputy chief and two battalion chiefs.

While the main part of the fire which was raging in the top floor of the three-story building was being fought by scores of firemen with powerful turrett streams, from ladders and the street, other firemen were playing a continuous stream of water on the Diamond Hotel and other buildings on the opposite side of the street in an effort to prevent the flames from crossing Diamond Street and spreading through the block of old flimsy buildings fronting on Diamond Street and Diamond Square. This they succeeded in doing after a quick piece of fire fighting under the command of Chief M. F. Shanahan, Chief Loxterman, Chief Smith and Chief Kuhlman.

Courtesy Arkansas Gazette.

Ruins of the Residential Section of Newport, Ark., After Fire Spread by High Wind and Wooden Shingle Roofs, Had Swept Over an Area Approximately Four Blocks Wide and Eight Blocks Long.

The firemen were greatly hampered by a steady rain which was falling, which put a thin coat of ice on the ladder rungs as it fell.

Police and Fire Surgeon Daniel E. Sable established a first

aid station in the lobby of the Idle Hour Moving Picture House on Diamond Street and treated a number of firemen for minor cuts.

The fire from all indications started in the tailor shop operated by the Kennedy Tailoring Company on the third floor of the building.

A total strength of 112 uniformed firemen were on duty at the fire. In extinguishing the fire fifteen engine and pumper streams were used, including the two turrett streams from the combination deluge and water tower wagon, 600 feet of 3-inch

Pittsburgh Firemen in Operation at High Value District Fire

hose, 7,150 feet of 2½-inch hose and 300 feet of one inch lead line hose, all cotton rubber lined, and 525 feet of ladders.

Twenty-one pieces of fire apparatus, all motor driven and tractor drawn, were in service at the fire, consisting of three 1,000 and one 750-gal. pumpers; one 1,100, one 900, and three 700-gal. steam fire engines; two combination hose and turret wagons; one combination hose and chemical car; one combination turret and water tower, and a 65-foot water tower.

While the tractor-drawn steam fire engine of Engine Company No. 4 was on its way to the fire, answering the second alarm, a cross chain on one of the front wheels broke and dropped in between the brake rigging and the brake band, locking the front wheel tightly, causing the heavy apparatus to skid on the wet, slippery street, the engine striking a trolley pole and jumping the curb stone and running into the front of a restaurant, breaking two large plate glass windows and a lot of dishes and glassware. No one was hurt, and the engine was only slightly damaged, and after getting the broken cross chain out of the brake rigging the engine proceeded to the fire and connected up to the fire hydrant ready for service.

The deluge combination hose, turret and water tower wagon was connected up in front of the burning building in Diamond Street and did efficient service in driving the flames back into the building which were threatening to cross the street.

Six lines of hose were connected to the wagon, two 2½-inch lines from Engine No. 11 which were siamesed into a 3-inch line into the wagon at 240 pounds pump pressure, two 2½-inch lines from Engine No. 19, a 1,000-gallon Ahrens Fox gasoline pumper, at 250 pounds pump pressure, and two 2½-inch lines from Engine No. 3, a 1,000-gallon American-LaFrance gasoline pumper, at 160 pounds pump pressure.

The paint on the deluge wagon and aerial ladder truck No. 1 and a number of other smaller ladders in service in front of the building were scorched and blistered by the intense heat.

WILLIAM E. PATTERSON.

A New Task for the Firemen—A ladder crew from Waterloo, Ia., recently rescued a pocket book which fell from the hand of a woman while she was crossing a bridge.

CHEMICALS CAUSE SECOND FIRE AFTER FIRST IS UNDER CONTROL

Explosion Throws Blazing Drums in All Directions, Spreading the Blaze—Second Blast, from Benzol Fumes, Again Starts Fire

EXPLOSIONS of chemicals caused a fire in Newark to ignite twice in the same building, the second time after it was apparently under control and all but a couple of engines had been returned to quarters.

The blaze was in the Miner-Edwards Alcohol Products Company, in Blanchard Street, near the Passaic River front, on March 5th, and originated on the second floor of the company's compound building, from an unknown cause, at 6 a. m. The fire was followed almost immediately by a severe explosion, which ripped away a section of the roof and hurled the burning drums entirely over the four-story building of the Eagle-Pitcher Lead Company, seventy-five feet away from the burning structure, the force of the explosion being apparently entirely upward, as the floor of the compound room was but little damaged. One of the blazing drums landed in a small lumber yard and started another fire, but this was speedily extinguished.

Chief John J. Towey, Newark, N. J.

After the fire had been apparently under control for several hours, and all of the engines but two had been returned to quarters, with two streams on the ruins, fumes from a tank of benzol on the second floor caught fire from the embers and there was another loud explosion. This was about 11 o'clock and in a few minutes the blaze was raging again.

The apparatus were hastily recalled and the fight had to be begun all over again. The second blaze was, however, soon controlled, with eight streams deluging the flames.

The first fire was discovered by the night foreman of the solvent building, adjoining the one involved, and he at once sent an alarm into the fire department. This was followed by a second alarm, when the first companies arrived on the scene, bringing Chief John J. Towey. The fireboat "Newarker" also arrived at this time and her powerful streams aided materially in confining the fire to the second floor of the building. The "Newarker" was stationed at a dock 200 feet from the fire.

When the first alarm companies arrived the explosion had already blown several blazing drums of chemicals through the roof of the building, and the second floor was entirely involved, with liquid fire running down to the first floor from the broken drums and barrels of chemicals on the floor above. There were 92 firemen employed at the blaze, consisting of two truck and seven engine companies, with American-LaFrance and Ahrens-Fox apparatus.

There were numerous 6-inch double hydrants available, spaced 300 feet apart, with 55 pounds pressure, the fire being in the low pressure district. Twelve engine streams were thrown, with nozzles 1⅛-inch in use. Some 8,450 feet of cotton, rubber lined hose were laid.

The wind blew the flames from the direction of the rest of the plant. A short distance away was the reserve store house of the concern in which were fifty tanks of ethylacetate, each containing 1,200 gallons, and about 200 barrels of the finished product, benzol and alcohol. It was a 1,200-gallon tank of ethylacetate exploding in the compound house that caused the first explosion and blew the blazing tanks of other chemicals in all directions.

A colored employee, working in the adjoining building to that burned, became panic-stricken when he saw the flames pouring out of the windows of the opposite structure and jumped through a second story window to the ground, sustaining injuries to his legs which required his being taken to St. James' Hospital.

A score of other colored men in the adjoining buildings

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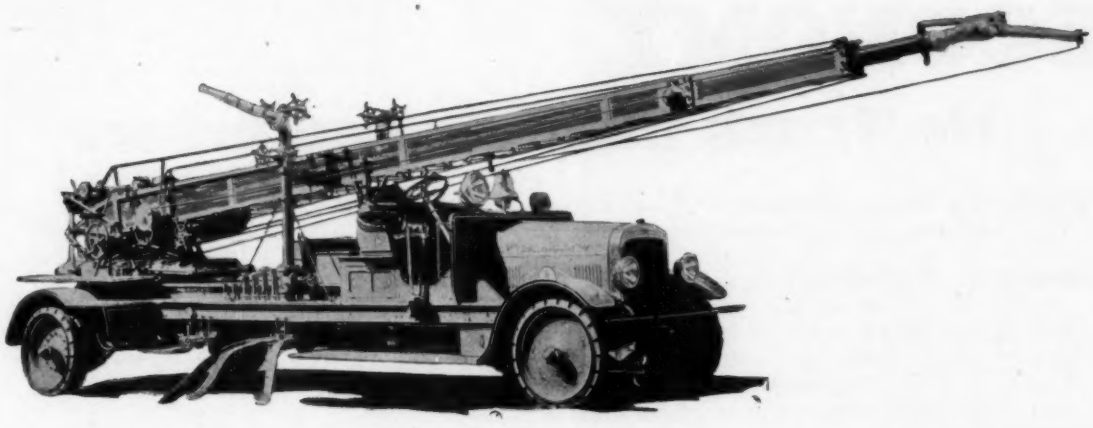

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Cooling System is a combination pump and thermo-syphon type. The circulation of water by pump is first along the valve seats, the hottest points, then into the head, over combustion chambers, around spark plug bosses and back through the radiator. The circulation through the cylinder jackets is by thermo-syphon system. This combination system results in very **even cooling, without over cooling the engine.**

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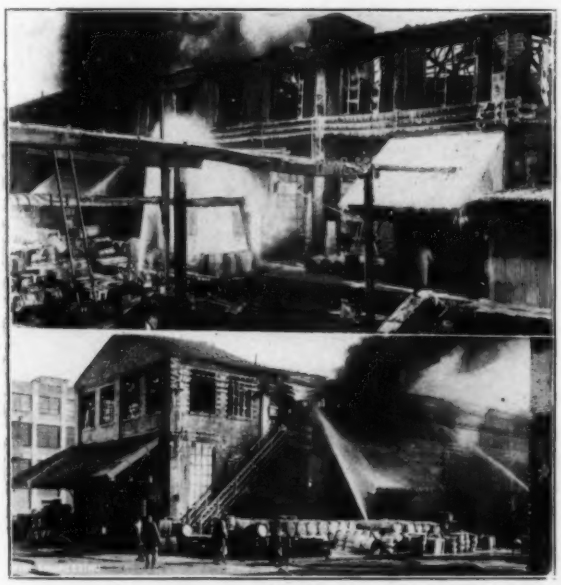
dropped their work when the fire started and hurriedly left the vicinity of the plant. As they dashed down the street they swept from the sidewalk the day engineer of the plant, who was on his way to work. He tried to get the fleeing workmen to return to the building and aid in salvage work, but they refused to heed him.

Crews of two switching engines pulled to safety a number of tank cars of inflammable material used in the manufacture of artificial leather, which stood on the siding. Blazing embers were dropping over the cars as the train crews pulled them out of danger.

Deputy Chief McDermitt and Battalion Chief Kiernan, refusing to allow their men to enter the first floor of the building, which was constructed of hollow tile, went in with hand extinguishers and extinguished several small blazes which had been started by embers falling through from the second floor, thereby keeping the fire confined to the second floor.

In referring to this fire Chief Towey says: "Three days before this fire there was a flash fire in this building, and eighty-four sprinkler-heads went off, extinguishing it. The company states that new heads were put in that night and the water turned on, although the fire department officers believe otherwise. The walls of the building were fireproof, and the floor was in good condition after the fire. The roof was of metal truss. The heat buckled the trusses, pulling the roof in. If the



Upper View, Courtesy Newark Evening News.

Two Views of the Large Newark Fire in Chemical Establishment, Showing Destruction Wrought by Heavy Explosions of Chemicals in Drums in Building.

trusses had been protected, the roof would be intact. The building was used to manufacture lacquer. The company has been using old smokeless powder in place of guncotton in some of its mixers."

The loss on the building, valued at $150,000, was $25,000, and on the contents, valued at $225,000, $20,000.

Stubborn Boxes Cause Large Fire Damage

A fire started in a row of one-story stores in a section of New York City, and the blaze was discovered while it was still in its incipient stage. The one who went to send in an alarm from a nearby fire alarm box found the box sealed tight on account of a new coat of paint. A taxicab driver tried in vain to send in an alarm from a number of boxes in the vicinity and finally drove up to a fire station to "sound" a still alarm. By the time the fire apparatus responded, the fire had reached the "two-alarm" size and resulted in a damage of $75,000.

Colorado Springs, Col., Purchases Apparatus—An Ahrens-Fox pumper of 1,000-gallon capacity was purchased by Colorado Springs, Col.

WHAT'S BURNING

From reports covering the United States and Canada, the estimated losses by fire during the week ending March 26, 1926, aggregated $7,458,900, as compared with $5,101,400 for the corresponding week in 1925.. The total is derived by adding to the amount in the list given, which includes only those of $10,000 loss and over a sum equal to fifteen per cent of that amount, statistics showing that the smaller fires average about that proportion of the larger. Losses for the week ending March 5, follow in their right order.

The figures published in this list, compiled from telegraphic reports of fires occurring during the weeks, are based on estimates made at the time, which are necessarily hurried and are subject to latter investigation and consequent correction. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

TEXARKANA, ARK.—Three stores and one residence..... 35
MILLEDGEVILLE, GA.—Six buildings in business district destroyed 145
OTTAWA, ILL.—Williams Shoe Store, Main Street..... 20
MOORE PARK, MICH.—Property of New York Central R. R.. 15
PARK STATION, VA.—Plant of Gardner Extract Company destroyed 25
ROCHESTER, N. Y.—Vehicular equipment of Dept. of Public Works 195
VERDON, NEBR.—Business establishments and theatre..... 45
WILLIAMSPORT, PA.—Lilley Building, South Williamsport.. 45
BUFFALO, N. Y.—Property at 166 Michigan Avenue and adjacent buildings 60
CHICAGO, ILL.—Building at Fulton & Halsted Streets..... 490
CAMDEN, ARK.—Brown Building, South Adams Street..... 20
BLYTHEVILLE, ARK.—Business section damaged..... 15
HEBER SPRINGS, ARK.—Glendale House destroyed..... 15
ORANGE, CALIF.—Barr Lumber Yards..... 25
DUQUOIN, ILL.—Owen building..... 20
PEORIA, ILL.—Property of Diamond Electric Company..... 45
AUSTIN, MINN.—Home of F. G. Page, six miles south..... 35
MINNEAPOLIS, MINN.—Two business houses on Fifth Street south 60
JACKSONVILLE, ILL.—Store of J. W. Lane & Son..... 25
CRYSTAL FALLS, MICH.—Four business buildings destroyed 95
NASHUA, MONT.—Two business establishments..... 20
MONROE, N. C.—General Store of R. A. Morrow & Son..... 170
BEST, TEXAS—Hightower Building housing business concerns 20
BALLSTON SPA, N. Y.—Ballston Insulating & Foundry Company 70
MILLVILLE, N. J.—Property of Whitall Tatum Glass Company 195
PASSAIC, N. J.—Lobsenz Building, East Main Street..... 20
ROCHESTER, N. Y.—Sibley, Lindsay & Curr property..... 15
ELLICOTTVILLE, N. Y.—Hotel Ellicott..... 20
NIAGARA FALLS, N. Y.—Home of S. N. Ryder destroyed.... 15
BUSTI, N. Y.—General store of Fred Johnson destroyed..... 16
JOHNSTOWN, N. Y.—Warehouse of Harry Heiman..... 45
JAMESTOWN, N. Y.—Presbyterian Church Home destroyed.. 45
Cleaning Plant of Chas. Carpenter destroyed..... 15
PLATTSBURGH, N. Y.—Alaska Silver Fox Farm property... 15
PHELPS, N. Y.—Property of J. Van Hammill destroyed..... 15
NEWBERRY, PA.—Fisher Lumber Company..... 75
FORT ATKINSON, WISC.—Junior High School Building destroyed 120
MOUNT VERNON, WASH.—Windsor Hotel destroyed..... 145
HARBOR BEACH, MICH.—Community Building..... 45
HARPERVILLE, MISS.—Business block..... 20
MERIDIAN, MISS.—Barns of East Mississippi Insane Hospital destroyed 25
FORT WASHINGTON, PA.—Residence of A. Van Rensselaer near here 45
HUNTINGTON, W. VA.—Planing mill of Thos. W. Sliger destroyed 15
EDSON, ALTA.—Gem Hotel, C. P. Hotel and Griggs Store.. 15
VANCOUVER, B. C.—Elevator of Manitoba Grain Company.. 140
WATSONVILLE, CALIF.—Property of Corralitas and Cassidy Packing Houses 145
MARION, OHIO—Elevator owned by E. W. Boyer destroyed.. 40
LORETTEVILLE, QUEBEC—L. P. Pleau Glove Factory destroyed 20
BAINBRIDGE, PA.—Barn and stock on Kraybill farm near here 15
SALEM, N. J.—Property between 180 and 188E. Broadway... 35
SPARROWS POINT, MD.—Coke conveying plant of Bethlehem Steel Co. 55
SACO, MONT.—Bell Mercantile Building..... 20
IVYLAND, PA.—Five dwellings destroyed..... 45
HYANNIS, MASS.—Business building destroyed..... 70
NEW BRUNSWICK, N. J.—Lincoln Manor on Lincoln Highway 15
ADEL, GA.—Planing Mill of C. W. Carter..... 20
CHESTERFIELD, MICH.—General Store of A. J. Ullrich destroyed 25
LITTLE ROCK, ARK.—Building at Second & Main Streets.. 240
NASON, ILL.—Business section..... 25
MINERAL SPRINGS, VA.—High School Building destroyed.. 25
KINDERHOOK, N. Y.—Barns on farm of J. E. Van Alstyne 25
CAMBRIDGE, MASS.—Building of Cambridge Electric Light Company 15
MONTGOMERY, W. VA.—School Building destroyed..... 65
CHICAGO, ILL.—Bezark's Store in State Street Building.... 170
ST. JOHNSBURY, VT.—Building owned by Cary Maple Sugar Company 25
LITTLETON, N. H.—Odd Fellows Block..... 15
SUNBURY, OHIO.—Nine mercantile establishments and warehouses 85
NEW YORK, N.Y.—The Chantee Night Club, 132 West 52nd Street 20
TAMPA, FLA.—Warehouse owned by Lykes Brothers Steamship Company 140
DETROIT, MICH.—Building occupied by Fisher Wall Paper Company 490
KANORADO, KAS.—Property owned by J. W. Germann..... 30

(*Continued on page 363*)

INDUSTRIAL PLANT PROTECTION

Ford Efficiency in Fire Brigade

Fighting fires is one thing, but when there aren't any fires to fight why the firemen haven't anything to do—that is, most of them.

Just about everyone knows how heavy time hangs on the hands of the "boys" around the average residential district fire station between alarms, but anyone interested in seeing something different can find it at the central fire station in the Highland Park Plant of the Ford Motor Company.

Here the picture is entirely different. Just back of where the fire truck stands there is a row of drill presses and between alarms the firemen keep busy operating the presses in the manufacture of parts for Ford cars.

Besides, the men work in eight-hour shifts twenty-four hours a day. There are no sleeping quarters and the men are wide awake and on the job all the time.

It is less than twenty feet from the presses to the fire truck, so when an alarm comes in it is only a matter for each man to make a quick turn around and climb on the truck to transform himself from a machine operator into a fireman on the way to a fire.

Ninety men regularly employed in the Highland Park plant are on the fire department roll and this force is augmented by 200 specially trained men who may be called out at a moment's notice in case of emergency.

The regular firemen work in three divisions, thirty on each eight-hour shift. Of those in each shift ten are on duty all the time in the central fire station. As soon as the first squad leaves in response to an alarm, the second squad moves in and if it is called out before the first returns there still is the third left to come into headquarters.

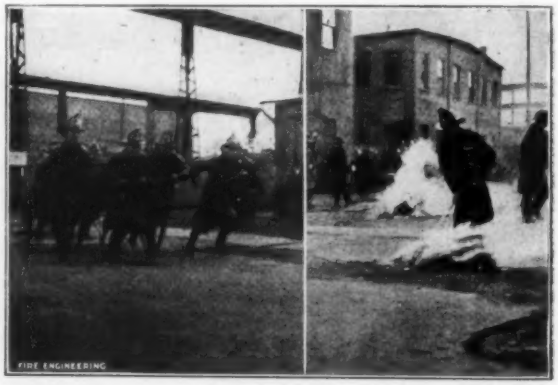
To provide and maintain adequate fire protection for the plant is in itself a big job. It must be remembered that more than 50,000 men are employed at Highland Park and that the plant area covers 278 acres, of which 105 are under roof. There is a complete fire alarm system, with boxes located at convenient places throughout the buildings and yards and in addition to the fire truck the fire-fighting equipment in the plant includes 100 forty-gallon chemical tanks mounted on wheels, 2,000 three-gallon hand extinguishers and six miles of hose on racks in various parts of the plant close to fire hydrants.

Upper, Ford Firemen, Who are also Mechanics, at Work on Drill Presses in Rear of Fire Station. Lower, Fire Truck and Crew at the Highland Park Plant of the Ford Motor Company, Detroit.

An Industrial Fire Department Competition

By GEORGE H. GREENFIELD

Competitions between private fire brigades of large industries in the vicinity of Montreal have proved to be very successful in stimulating the interest of the various brigades in their work and interesting the officials and employees of the participating companies in fire protection. Four years ago the Canadian Car and Foundry Company (Member N. F. P. A.) inaugurated a series of competitive manoeuvres for the fire brigades of their various works. The plan was favorably received at the start and has developed so that the annual competition is now planned for as a regular features by the several brigades.



Left, A Team Going Into Action. Right, The Fire Extinguishing Contest.

As far as is known this competition is the only one of its kind conducted in Canada, but the plan could doubtless be advantageously adopted for other localities. The competition described below may be taken as typical of the general methods followed.

Two series of competitions are held, one for the four plants around Montreal and one for the four out-of-town plants. A silver cup is donated by the company for the team making the best showing in each group and cash prizes are given to the chief, captain, and men of the winning teams. The cup becomes the permanent property of the works winning it for two successive years. In the four years of competition so far no team has obtained possession of the cup.

Each works sends one team of seven men and a captain, the team being selected by the works chief.

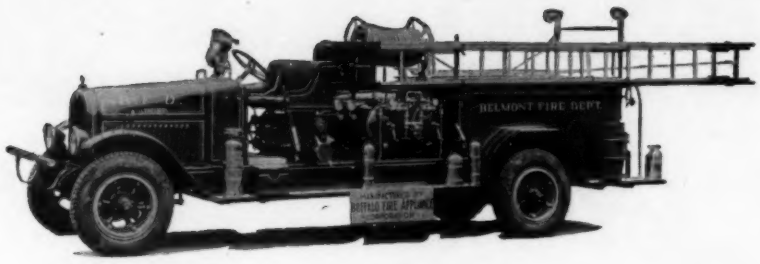
The 1923 competition was held on neutral ground, the premises of the Dominion Bridge Company, Lachine, P. Q. Representatives of the Canadian Fire Underwriters' Association and the Dominion Bridge Company acted as judges and timekeepers.

In the competition the teams were required to wear full equipment, consisting of rubber coats, rubber boots, helmets and belts and spanners. Each team used its own hose truck fully equipped and with not less than 300 feet of 2½ inch cotton rubber lined hose, coupled.

The events were carried out as follows:

1. Hose reel or truck was located 100 yards from the hydrant with caps on butts. A target 30 inches in diameter with a 12-inch revolving disc in the center was located 200 feet beyond the hydrant. The team had to attach the cut-out valve, stretch 150 feet of hose, disconnect it from the truck, attach the nozzle, turn on the water, and hit the target so that the disc would revolve.

BUFFALO



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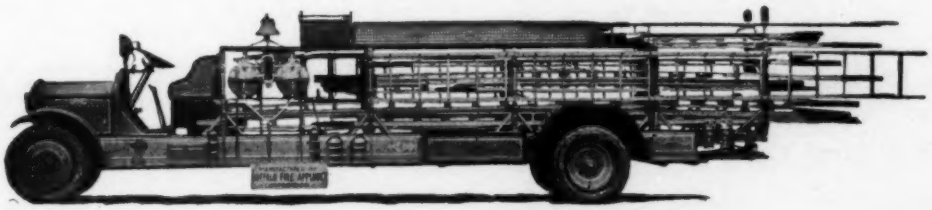

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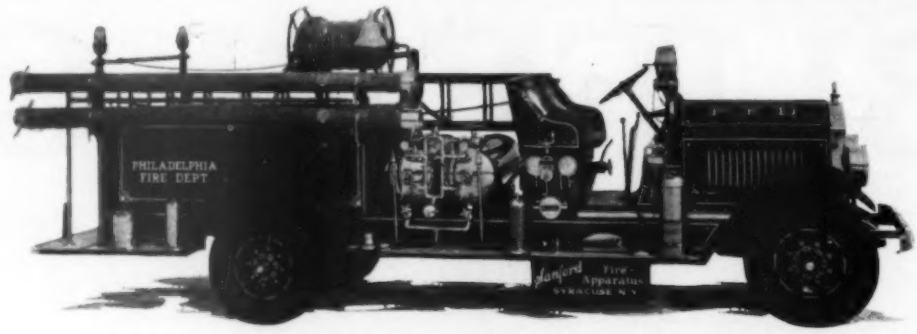

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2. With the above layout of hose on the ground, the next evolution was to pick up the hose, turn on the water and hit the target, then assume the middle length of hose burst, replace by a spare length taken from the truck, turn on the water, and again hit the target.

3. With the above layout of hose on the ground, the next evolution was to pick up the hose, turn on the water, and hit the target, then shut off, uncouple, take forward first length of hose and add 100 feet of hose, couple up, turn on the water, and hit the target. In this evolution the target was placed 300 feet from the hydrant.

The fastest time turned in on these three events was 39 2/5 seconds for the first, 27 1/5 seconds for the second, and 33 seconds for the third, making a total of 1 minute 39 3/5 seconds for the complete evolution.

Another interesting contest was staged as follows:

Four fires were built of excelsior, approximately 3 feet by 3 feet by 9 inches thick. Each team entered one fireman and the men were lined up ten yards away from the fires, each with a 2½ gallon soda acid extinguisher. The fires were lighted simultaneously and at a given signal the competitors ran to the fires and extinguished them. This contest provided considerable excitement and amusement. The man who put his fire out first, went over and assisted one of his competitors with the balance of the liquid in his extinguisher.

Aside from the competitions the various teams gave special demonstrations and exhibitions. One team demonstrated the use of 2-in. deluge streams. Another gave a first aid demonstration. Another team show the use of foam extinguishers on oil fires.

The last event was staged as a surprise by the Dominion Bridge Company, who had an old shed available in a corner of the yard. This shed was well filled with combustible material and saturated with fuel oil. The shed was fired and the fire whistle blown. The Longue Pointe team of the Canadian Car & Foundry Company responded with their 40-gallon chemical engine, while the other works teams, owing to the distance from the nearest hydrant, laid two lines of hose siamesed and backed up the chemical company, putting the finishing touches on the fire.

There were a large number of spectators, including prominent officials of the companies. The competition will continue to be an annual event and is considered to be of real value in promoting the fire protection efficiency of the various works brigades.—*N. F. P. A. Quarterly.*

What's Burning

(*Continued from page* 359)

SALEM, OREG.—Stables owned by Fred Loose, also adjoining property 45
JACKSONVILLE, ILL.—Plant of R. A. Watson at Valley City 450
LONG BEACH, CALIF.—Several derricks of the Signal Hill Oil Field 120
PINE BROOK, N. J.—Sunrise Mountain, home of Joseph Konnor 90
DENVER, COLO.—Storage house of A. D. Radinsky 15
WICHITA, KANS.—Stock of Ranney-Davis Mercantile Company 15
VAN BUREN, ME.—Mill of A. F. Richards destroyed 15
NORRISTOWN, PA.—Gas plant of Burdett Oxygen Company .. 35
EAST DORSET, VT.—Business section damaged 25
S. JACKSONVILLE, FLA.—Ice plant of S. Jasksonville Utilities Co. 90
KENSINGTON, OHIO.—Business district damaged. 40

From reports covering the United States and Canada, the estimated losses by fire in the week ended April 2, 1926, aggregated $5,518,860, as compared with $6,871,700 for the corresponding week in 1925:

MACON, GA.—Southern Box & Basket Company destroyed.... 225
GRAND VIEW, IND.—Six business establishments destroyed.. 35
DURHAM, N. C.—Four dwellings, apartment house and store destroyed 20
RUTLAND, OHIO.—Bathburn store and Burton residence.... 175
HAMILTON, VA.—Five stores and four homes destroyed..... 80
PESCADERO, CALIF.—Eight buildings destroyed..... 25
SMITHFIELD, PA.—Three-story apartment and dwelling.... 80
GREENWICH, N. Y.—Warehouse of Eddy Plow Company destroyed 25
CORNING, N. Y.—F. W. Woolworth store and building..... 40
SOUTH RIVER, N. J.—Warehouse and factory building, Water Street 140
ONTARIO, N. Y.—Greenhouse of George W. Scott..... 75
WINCHESTER, MASS.—Bay State Saw & Tool Company destroyed 45
GENEVA, N. Y.—Prospect Avenue School building destroyed.. 140
REBOBOTH, MASS.—Home of Mrs. W. H. Evans, Mt. Terry-diddle 35
HAMILTON, ONT.—G. W. Robinson & Co. department store.. 350
CALGARY, ALTA.—Barn and horses of Robert Emmert, Victoria Park 25
FAIRMOUNT, IND.—Plant of Fairmount Pie Plate Company destroyed 30
ALBANY, KY.—Nine dwellings destroyed 30
HAGERSTOWN, MD.—The Castello Hotel..... 15
POTTSVILLE, PA.—Petrey & Horn textile factory..... 30
PURCELLVILLE, VA.—Six retail stores destroyed..... 135
ST. CATHARINES, ONT.—T. F. Shurley Company..... 15
TULLOS, IOWA.—Business block destroyed..... 140
PADUCAH, KY.—Plant of Edgewood Dairy Company..... 15
McHENRY, N. D.—Store of D. C. Best..... 15
BRIDGEPORT, CONN.—Isolation Hospital..... 15
EASTON, PENNA.—Two floors of Opera House Building.... 175
MT. VERNON, N. Y.—Two business establishments, Stevens avenue 30
GREENWICH, CONN.—Storehouse of Eddy Plow Company.... 25
GRAND VIEW, IND.—Woolfork store and adjoining property.. 65
FT. MADISON, IOWA.—Shore boom of Santa Fe R. R. bridge.. 15
MANCHESTER, IOWA.—Farm buildings owned by Thos. R. Cummings 15
FRANKFORT, KY.—Barker Bakery destroyed—Howser's restaurant 15
RICHMOND, KY.—Wholesale Grocery of Kellogg & Company.. 40
MONTROSE, S. D.—Several buildings destroyed..... 15
NEW SOUTH MEMPHIS, TENN.—Hall Mfg. Company and two adjacent establishments..... 15
IRVINGTON, N. J.—Irvington Varnish and Insulator Company. 90
AKRON, OHIO.—Gough Lumber Company, North Case avenue. 30
RICHMOND, VA.—Strand Theatre..... 25
DETROIT, MICH.—Electrical Warehouse, Inc., Larned street. 40
COAL CENTER, PENNA.—Four buildings in center of town... 30
MT. CARMEL, PENNA.—Property of Hill View Coal Company. 70
JACKSONVILLE, FLA.—Municipal docks on St. Johns River.. 40
SHREVEPORT, LA.—State Charity Hospital..... 40
LOUISVILLE, KY.—Plant of Ahlers & Gregoire Company.... 25
WYOMING, PENNA.—Warehouse of Wyoming Shovel Works destroyed 65
NEW BRUNSWICK, N. J.—Triangle garage, Lincoln Highway between this place and Metuchen..... 37
EAST HAMPTON, CONN.—Offshay Store, Doman's Corner.... 42
FLORENCE, ALA.—North Alabama Duco Company and adjoining property..... 25
CALGARY, ALTA.—Barn No. 43, Victoria Park..... 25
RIGBY, IDAHO.—Two story brick block..... 85
BERWICK, ME.—Three buildings on Market Street destroyed.. 20
FORNEY, N. C.—Norwood Lumber Company..... 110
DREXEL HILL, PA.—Home of J. C. Mahoney, Shadeland Avenue 45
PITTSBURGH, PA.—Building occupied by Frederick Club.... 25
HOQUIAM, WASH.—Property of Robert Gray Shingle Company. 15
CHEYENNE, WYO.—Quartermaster hayshed, Ft. D. A. Russel. 20
WAREHOUSE POINT, CONN.—Several buildings owned by Granger Horse and Cattle Company..... 40
CAMDEN, S. C.—Residence of Mrs. J. L. Knapp..... 15
NEWMARKET, VA.—Manor Mill destroyed, located near here.. 50

55,000-Barrels Tank Fire in El Dorado, Kan.

An oil tank of 55,000-barrels capacity was struck by lightning in El Dorado, Kans., and developed into a dangerous fire because of the proximity of other tanks on this farm. This picture, Fig. 1, taken at 6:30 a. m. shows some men in the right corner ready to fire a cannon to release the oil out of the tank into the dike. 2—Photograph taken at 7:00 a. m. shows a nearby tank badly scorched. The burning tank boiled over at 10:35 a. m. 3—What happened 30 minuites after tank boiled over. The picture was snapped at a distance of 3½ miles from the tank on a bright, sunny day. The burning oil spread for a mile south of the tank, and caused the destruction of four oil rigs and some smaller tanks. All day long the roads in this district were shaded by the intense black smoke. The photos and the description are furnished through the courtesy of Chief Donald J. Rayburn, El Dorado, Kans.

Drills to be Instituted in Mason City, Ia.—Regular drills will be instituted in Mason City, Ia., under the direction of Drill Master Frank Cook and under the supervision of Chief Tom Conner. Frank Cook was sent to Chicago to attend their drill school and learn the latest methods in fire-fighting.

New Equipment for Somonauk, Ill.—The village of Somonauk, Ill., has ordered a Peter Pirsch triple combination car with a capacity of 350 gallons, the price being $4,320. Five hundred feet of fire hose has been ordered from the Eureka Fire Hose Co.

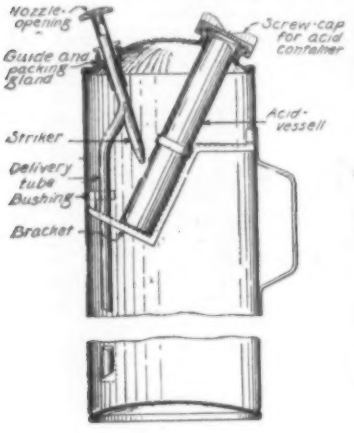
Six-County Convention May Have Carnival—The executive committee in charge of arranging for the 1927 convention of the Six-County Firemen's Association are formulating plans for a carnival to be held in conjunction with the gathering. The association covers the following Pennsylvania counties: Schuylkill, Northumberland, Dauphin, Montour, Columbia and Luzerne.

Recent Patents

Descriptions of Patents Recently Issued of Interest to Fire Departments—Extinguisher—Hat—Fire Preventer Screen

Portable Fire Extinguisher

A patent (No. 1,559,721) has been granted to Wolfgang Magg of Vienna, Austria, for an improvement in the portable type of fire extinguisher based on the principle of the combination of two chemicals for the generation of the pressure.



The illustration shows a longitudinal section of the fire extinguisher. The case of the fire extinguisher is seamed air tight. The lid should preferably consist of two layers, a thin inner layer of high grade material and a thicker outer layer of cheaper grade material. It may be sheet iron. Two openings are provided in the lid the edges of which are bent outwardly to form short connecting nozzles in which the packing gland and the guide for the striker and screwed sleeve for the acid are fixed.

The striker consists of an extension piece rigidly connected to the delivery pipe. The striker forms an angle with the longitudinal axis of the acid vessel. The acid vessel or its perforated cage rests on an angular bent support which is attached to the wall of the container. In the lower half of the perforated cage which is prevented from turning, is an opening for the striker so that the fracture of the acid vessel takes place at the lower portion. Therefore the whole of the acid will flow out of the acid container without any liquid remaining. A cap is provided for closing the sleeve.

The delivery pipe is joggled at the point where it is joined with the striker. It is prevented from turning in the bushing by means of the bracket and a bushing.

The device works by the breaking of a glass acid bottle by means of the striker and the two liquids combining and flowing out of the nozzle which is located at the head of the striker. It is claimed that this device will make possible the mixing of the entire contents of the acid bottle and will eliminate some of the undesirable features of the break-bottle type of fire extinguisher.

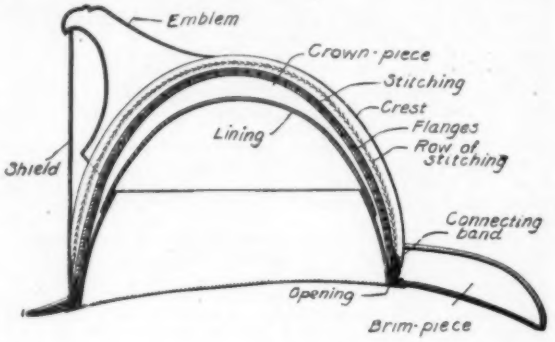
Fireman's Hat

A patent (No. 1,539,997) has been granted to Arthur Fanichel, a resident of Alameda, Cal., for a design of a fireman's hat or helmet. An object of this design is to provide an air space from the crown piece of the helmet to the head of the wearer and to secure a more comfortable fit on the head. It is claimed that this hat is economical to manufacture.

The hat consists of a crown piece which is a single piece of water-proof fiber formed in any suitable known manner to form a parbolic shape. There is a brim piece consisting of a single piece of relatively stiff and water proof fiber or similar material. The brim piece is provided with an opening midway between the side edges of the brim piece in which the marginal edge portion of the crown piece fits. A connecting band encircles the crown piece at the upper end of the opening and has an end portion secured to the stitching of the crown piece—the band is then turned downwardly over the upper end portion. The lower end of the connecting band is attached to the brim by stitching.

A lining is provided which conforms in a measure to the shape of the crown. The upper portion of the lining will be spaced from the corresponding portion of the crown piece when the brim portion of the lining is secured to the corresponding portion of the crown piece by stitching. The rim portion of the lining may extend underneath the portion of the brim that margins on the opening and may be secured to the latter by stitching.

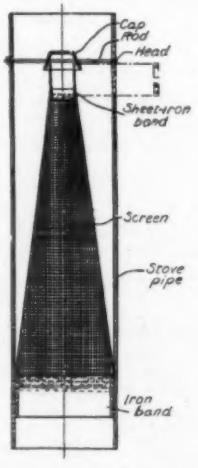
A main comb piece extends on the crown longitudinally of the latter and comprises of a single strip of leather or like flexible material which is bent longitudinally to provide an upstanding ridge or crest and a pair of attaching flanges extend laterally to opposite sides of the ridge. The ridge is secured by stitching and the flanges are attached to the crown piece by stitching. Additional crown pieces extend radially on the crown piece and converge at the apex of the crown. A plate in the form of a shield may be attached to the crown piece of the hat and an



ornament or emblem may extend between the upper portion of the crown and upper side of the plate—the outline of an eagle is shown.

Fire-Preventer Screen

The design of a fire-preventer screen (patent No. 1,572,925) is of interest because it marks the introduction of the woman-inventor in fire prevention fields—it is the idea of Mrs. Edith Harteau of Sobieski, Wisconsin. The object of the invention is to prevent sparks and cinders in stoves from going up the chimney and causing fire from a defect in the chimney construction or from sparks falling on the roof.



A screen having a mesh of 12 spaces an inch is provided inside of the stove pipe. This tapers from a point at the top of the device which is 2 inches in diameter to the full width of the bottom. It is joined at the top and bottom by bands of sheet iron which fit securely inside of the stove pipe. A cap which is made of sheet iron is held in place by four supports. A rod with a flat head passes through the cap and is threaded at the other end to receive a nut which holds the device in place inside of the stove pipe.

In operation, when the sparks rise in the preventer, they come in contact with the screen and the cap. The sparks are thereby extinguished and fall back into the stove.

New Equipment for Beaumont, Texas

The fire department at Beaumont, Texas, is to be strengthened by the expenditure of $50,000 for apparatus. The city has issued bonds to the amount of $750,000, for various improvements. The fire department additions will include a private car for Chief S. D. O'Connor, a new pumper, additions to the fire alarm system, and a service truck for all around work.

Six Essential Requirements of a Fire Hydrant

1. Ample Water Supply
2. Rugged Construction
3. Non-Freezing
4. Compression Valve—closing with the pressure
5. Minimum Maintenance. All inside parts, including Seats, removed through top of hydrant
6. Adaptability to Installation Changes √

What Does the Fire Chief Ask Himself When About to Buy Fire Hydrants?

Adaptability ✓

The simple, inexpensive and practical manner by which Darling Fire Hydrants can be adapted to new grades and fill-ins has prompted many fire departments to use Darlings in preference to all others.

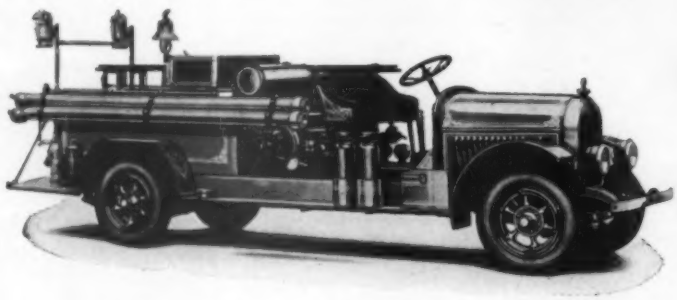
All that is necessary to raise its height from 6 to 60 inches is a wrench and a Darling expansion section. Simply insert the desired length section between the base and the lower barrel flange and the job is done. It is not necessary to use a longer stem, disconnect the base from the line or remove the working parts.

And it is just as easy to turn the nozzle to the desired direction. Unscrew the base bolts and the hydrant is free to swing into any position.

The economy effected by these features alone justifies the use of Darling Hydrants in every progressive city—and the progressive city is always faced with the problem of raised street grades.

DARLING VALVE & MANUFACTURING CO.
Williamsport, Pa.
New York Chicago Oklahoma City Houston

DARLING
FIRE HYDRANTS



COSMOPOLITAN

means

Fire Protection

The Cosmopolitan is a low-hung, powerful fire fighter with a six cylinder motor possessing speed, power and rapid acceleration.

It is equipped with the American-LaFrance rotary gear pump famous for its remarkable adaptability to fire duty.

This dependable fire fighter has back of it the engineering experience of the American-LaFrance Fire Engine Company. It is especially designed for communities requiring dependable fire protection at a moderate initial investment and a low maintenance cost.

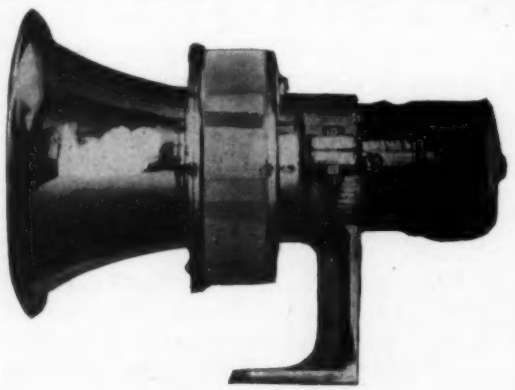
AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

ELMIRA, N. Y.

Branches: New York, Boston, Atlanta, Philadelphia, Baltimore, Denver, Minneapolis, Los Angeles, Pittsburgh, Chicago, Dallas, Canadian Factory: Toronto, Ont., San Francisco, Kansas City, Mo., Portland

C. A. M. Sirens

are better sirens



They are designed solely for emergency signalling and are unsurpassed for ruggedness of construction, simplicity and accessibility of parts.

They are built to give service and to endure.

Bronze is used where bronze serves best; likewise with other metals. C. A. M. Sirens may well be classed as aristocrats in the siren field. They are "quality" sirens.

If you are in the market for the best that can be built in the way of electric fire apparatus sirens, get in touch with us. Write for bulletins.

C. A. M. Manufacturing Company

802 Humboldt Bank Building San Francisco, California

FALSE ALARMS

BIG MOMENTS IN LITTLE LIVES— By Kessler

—*N. Y. Evening Graphic*

A FALSE ALARM

By L. C. CLONEY,
Beaumont, Tex.

Clang! Clang! Clang! The fire bell rang.
"It's ONE-TWENTY-THREE—boys, where's the gang?"
Here they come slipping down the pole,
Wrapped in their "bunkers" for the night is cold.

"Better look at that tape again—I might not be right,
And this is a dark and stormy night."
The boys took their places by their captain's side,
And were off on that dangerous, slippery ride.

"Say there, hurry up, ring that bell,
Don't you see we're riding fast as hell?"
"It's raining like the devil, and the wind is blowing cold—
It will surely be a 'burner' if it ever gets a hold."

The siren shrieked—and the boys rang the bell,
For the pavement was slippery and the night as black as hell.
"Here's that death curve—now hold her good and tight,
We've got to make better time—we've got to get right."

* * *

For there may be someone waiting
To be rescued from the flames.
Some poor old gray haired mother—
Or some young and pretty dames.

"Well, here's the right location,
But there's not a thing in sight,
It's just another false alarm,
On a cold and rainy night."

"What's that noise down there?" shouted the Chief as he ceased from his labors in directing the fire department at work and directed his attention to a point down the street where there was considerable excitement.

"A fire truck tried to turn a corner," said a bystander.

"Yes, what about it?"

"Well, there wasn't any corner."

The fire department of London, England has its problems. Possibly the most troublesome is the dense fog which occasionally hangs over the city.

Recently the officer in charge of a station received, during a very foggy morning, a telephone message from one of his men.

"I'm sorry, sir," the fireman said, "but I can't come down to the station this morning on account of the fog. I have not yet arrived home yesterday."

AND THE MUSICAL FIREMEN AGAIN

Music as a means of flitting out flames seems to be a continual source of inspiration. Now Neal O'Hara comes out in the New York World with the following:

A scientist has been calling at New York fire houses and extinguishing flames by sound. He believes he can solve the fire problem in large cities, and we believe he can too.

Mr. Kellogg, who is performing these still alarm feats, ignites a gas flame that is two feet high. Then he draws a bow across a special violin and poof! poof! the fire is put out.

It is strictly on the level. Tonal vibration does the trick.

From this marvelous demonstration it is apparent that violin playing is only in its infancy. It means that child musical prodigies are as liable to grow up and be hook and ladder men as they are virtuosi.

It means Mellie Dunham cannot only stop a vaudeville show; he can extinguish a four-alarm blaze.

It is wonderful to think of violin music checking a fire. Maybe Nero was only trying to help the fire laddies when he fiddled while Rome burned.

It won't be long now before our modern fire trucks are junked along with the brave fire hosses. Up-to-date cities will have a bunch of musicians loafing around their fire houses.

On the first alarm the first violins beat it to the scene of the blaze. On the second alarm the second violins turn out. When the general alarm is pulled in, the cellists and bass viol musicians respond, they pump harmonious vibrations on the holocaust, piling up encore after encore till the all-out signal is given.

Factories and warehouses will rip out their automatic extinguishers. They will install those nickel-in-the-slot pianos with a violin attachment.

Theaters will discard their asbestos curtains and put extra violinists in the orchestra pit.

TOLEDO, O., April 3.—A fire which gutted the heart of the retail section was checked early this morning with a $2,000,000 loss. When Fiddle Company No. 14 and the Apollo String Quartet arrived in answer to the first alarm the blaze had assumed menacing proportions.

The fire fighters were up against it on account of below-zero weather. They had hardly started on their first selection when their strings broke. The resin also froze to their bows, adding to their difficulties.

Downtown Toledo undoubtedly would have been wiped out except for Fritz Kreisler. Mr. Kreisler was en route to Chicago for a concert, but jumped off the train and quelled the flames with an impromptu program. Rubenstein's Melody in F turned the trick, he told the local Board of Underwriters.

BOSTON, May 13.—The broadcast of the Boston Symphony Orchestra here tonight was cut short by an S O S call from Providence, R. I., where a four-alarm fire was in progress. The symphony musicians donned their rubber coats and tin hats and made Providence in three-quarters of an hour. They extinguished the fire with sixteen violins and two cellos. The conductor's baton also helped. The loss was confined to $250,000 and one Stradivarius.

WASHINGTON, June 20.—Vice-President Dawes is at work on a violin composition which will simultaneously extinguish fires and soothe the savage beast. It is aimed for use when stables and live stock barns catch fire.

NEW YORK, July 6.—Now that fires can be put out by drawing a bow across a violin, inventors are at work on a magic lamp that can be rubbed to produce hot coffee and sandwiches for wearied firemen.

SUCH IS FAME—(AT HOME)

C. Hayward Murphy, one of the Fire Commissioners of Detroit, Mich., tells the following joke on himself. It seems the motor cars of the civilian officials of the Detroit Fire Department, have on the roof of each car, large white letters D. F. D. so that the traffic policeman in the tower can look down and spot an official vehicle that should not be delayed. Recently, the Murphy official car pulled up for a red light at the tower and the policeman from the open window above, called out—"All right Denver, go ahead."

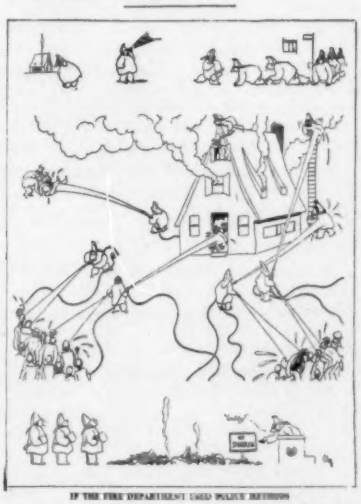
Two members of a company in the New York Fire Department who had been pals for many years, and who had served their department nigh onto three decades each, had many points of interest in common.

Chief among these was that neither had been attracted by the wiles of the ladies to a point where he had capitulated into matrimony.

As they saw younger members of the company join the ranks of the married one by one they had a slight change of heart, as is evidenced by the following conversation overheard recently:

"Say, Jack," said the younger, "would a long stocking hold all you wish for Christmas?"

"No, Pete," said the other, "but a pair of long stockings would."



IF THE FIRE DEPARTMENT USED POLICE METHODS

—*Judge.*

FIRE DEPARTMENT ACTIVITIES

Woodbine, Ia., Acquires New Pumper—A triple combination Pirsch-Reo car of 300-gallon capacity has been delivered to Woodbine, Ia.

Mason City, Ia., Increases Firemen's Pay—Provisions have been made for granting an increase in the April salary of the firemen of Mason City, Ia.

Oswego, N. Y., Receives Fire Apparatus—The Croton Hose Company of Oswego, N. Y., received a combination chemical and hose car mounted on a one-ton Ford truck.

Louisa, Ky., Considers Apparatus Purchase—A committee from Louisa, Ky., is investigating the merits of various fire apparatus with a view towards purchase.

Kansas City, Mo., Firemen Oppose Charter Change—The firemen of Kansas City, Mo., have lost their civil service privileges through the adoption of a new city charter.

Newport, Del., Buys Pumper—The new pumping engine recently bought by Newport, Del., has been tried out and turned over to the local fire department.

Chief Flatman Re-elected at Waunakee, Wis.—At the recent annual election of officials at Waunakee, Wis., W. J. Flatman was again chosen Chief of the fire department.

New Pumper Accepted at Mt. Olive, N. C.—Following an acceptance test, Mt. Olive, N. C., officially added an American-LaFrance 750-gallon pumper to the department. At the Underwriter's test it exceeded its requirements.

Nyack, N. Y., Firemen Establish Library—As a matter of education the fire patrol at Nyack, N. Y., has opened a library consisting of all kinds of fire prevention and extinguishing literature.

Great Neck, N. Y., Receives New Truck—Vigilant fire company of Great Neck, N. Y., has been presented with a Waterous chemical truck by a citizen of Kensington, in memory of his three children.

Ord, Neb., Elects New Chief—Guy Burrows has been chosen chief of the Ord, Neb., fire department. Chief Burrows is an experienced fireman, having served for many years as foreman of one of the Ord fire companies.

Penn Borough Firemen to Receive New Boots—The volunteer firemen of Penn Borough, Pa., after wearing the same rubber boots for seventeen years, will soon receive new boots. When the city council was told the length of time the boots were in service, new footwear was ordered.

Millington, Md., to Add More Members—The fire department of Millington, Md., is conducting a campaign to add more members to the organization. The chief speaker of the evening was Chief William Lutz of Wilmington, Del. As a result of the meeting twenty-five more men were added.

Manitowac, Wis., Chief Expects to Retire—Chief J. H. Kratz of Manitowac, Wis., expects to retire some time this summer. Mayor Georgenson stated that if a man of the proper qualifications could be found within the department, the next chief would be picked from the local members.

Manchester, La., Elects New Chief—The City Council of Manchester, La., has chosen E. W. Williams chief of the local fire department, with T. Shelly and Everett Leighton as first and second assistants respectively. All three have rendered excellent service to the city for years.

Marine Fire Service at San Francisco—The National Fire Prevention Association at San Francisco, Cal., is to afford better protection to people traveling on coastwise and inland vessels. It is proposed to make new rules regulating the construction of such ships.

Boston Has Women's Auxiliary—The secretary of state of Massachusetts has granted a charter for the incorporation of the Women's Auxiliary of the Boston Fire Department, Inc. The purpose is to establish friendship and sociability and to aid in the benevolent work of the department.

Allentown, Pa., Company Celebrates Anniversary—The members of the Franklin Company No. 10 of Allentown, Pa., celebrated its twenty-sixth anniversary at a banquet at the Hotel Allen at which more than three hundred guests were present.

North East, Pa., Asks Increase of Appropriation—A direct appeal has been published in North East, Pa., asking that the appropriations in that town for the upkeep and expenses of the fire department be increased so that it will not be necessary for the firemen to have numerous benefit events to raise funds.

Iowa Fire Marshal Issues Report—J. A. Tracy, fire marshal of Iowa, in his fifteenth annual report, stated that nearly ten million dollars of property was destroyed in the state last year and 86 deaths were the result. There were 6,113 fires in the state, an increase of 638 over that of the year previous.

Chicago Salvage Company Maintains Reputation—Salvage Co. No. 3, of the Chicago fire department still maintains its position as the busiest company in the world. It answered 2,735 alarms last year, with 988 hours of fire duty. Nine companies composing the organization responded to 13,079 alarms, spread 22,032 covers, traveled 33,444 miles, and performed 6,542 hours of fire duty.

Topeka Designates Companies for Annexed Land—Chief Joseph Waidelich of Topeka, Kans., has designated two companies for the fire protection of Oakland, the recently annexed city territory. Because of the lack of water mains in this district, most of the fires will have to be fought by chemical streams. The city water department will extend the mains to this territory.

Atlanta, Ga., Assistant Chief Dies—Joe H. Anderson, assistant chief of the Atlanta, Ga., department died suddenly at his home at the age of fifty-eight, and after twenty-eight years service. He was one of the eight members injured in Jass Manufacturing Company fire one year ago when an overloaded floor crashed burning the men under a mass of waterlogged waste cotton. Assistant Chief Anderson is survived by a wife and brother.

Jackson, Mich., Files Answer to Injunction—Jackson, Mich., has filed an answer to the bill for an injunction asked by the city firemen in which it is alleged that the city is compelling firemen to work more than twenty-four hours in forty-eight, contrary to the new state "double-platoon law." The city stated that they could not compel the firemen to work more than the required time nor due to present financial condition, could they institute the two-platoon system.

Fire Alarm Notes

Fire Alarm System Vetoed in Dansville, N. Y.—The plan to provide $10,000 for the construction of a fire alarm system in Dansville, N. Y., was defeated at a recent election.

Moravia, N. Y., Considers Fire Siren—At the spring meeting, Moravia, N. Y., will vote on the purchase of a fire alarm siren.

Paulsboro, Pa., Considers New Fire Alarm—Firemen have asked the council of Paulsboro, Pa., to consider the construction of a new fire alarm system with a sufficient number of fire alarm boxes to adequately protect the city.

New Brunswick, N. J., Awards Fire Alarm Contract—The contract for the construction of a fire alarm system in New Brunswick, N. J., was awarded to the Gamewell Fire Alarm Company.

Larchmont, N. Y., Considers New Fire Alarm System—Larchmont, N. Y., is considering the construction of a fire alarm system to replace the compressed air operated signal which they now use. The supply of compressed air is not sufficient to properly operate the siren.

Danger of Telephoning Fire Alarms—A fire which occurred in a grocery store at Lake Charles, La., communicated to the telephone exchange which was located in the rear of the second floor. The exchange was completely destroyed and an honorary fire commissioner, a fireman and a citizen were buried under the bricks when the walls fell. For thirty days the place was without telephone service and seven fire alarms were relayed to the fire station by auto and messenger. The fire alarm system was unaffected during that period and seven box alarms were received from outlying sections.

Do what *This* Chief Did

A well-known Fire Chief of one of our large cities specified Signal Two Collar Shirt, number 25, for his entire department.

With all the men wearing the same style and kind of shirt the department is now absolutely uniform, and the Chief and his men take pride in their appearance.

This Signal Shirt is long-wearing, dressy and practical. The two collars save wear and washing.

Signal Shirt Company
Racine, Wisconsin

Signal
REG. U.S. PAT. OFF.

Eastman Nozzles and Deluge Sets are

Designed by Engineers

who for over thirty years have specialized in equipment for producing superior fire-fighting streams in all sizes unsurpassed for solidarity, distance and effectiveness, and safely handled under all pressures.

WRITE FOR CATALOG

SAMUEL EASTMAN COMPANY, Concord, N. H.

MATHEWS

(Reg. U. S. Pat. Off.)

FIRE HYDRANTS

for

DOMESTIC

and

HIGH PRESSURE

Service

Note—

The positive waste valve.

All operating threads are above the Stuffing box.

No toggles, small screws or other small, quick-wearing parts.

All moving parts are bronze or bronze bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

Valves and Boxes
Cast Iron Pipe and Fittings

R. D. WOOD & CO.
Phila., Pa.

Successful Since Sixty-Eight

Worcester Fire Alarm Signals

Long experience in the manufacture of fire alarm signals has given the Worcester whistle a distinction of its own.

It is made to be heard above the din of factory or traffic. Its tone, in no way piercing or unpleasant penetrates to great distances. Operated in conjunction with the electric alarm installations or by steam. Made in four sizes.

We shall be glad to tell you about the Worcester Fire Alarm Signal. Ask for catalog R-51.

Union Water Meter Co.

WORCESTER, MASS.

New York Office:
50 Church St.

Phila. Office:
539 Real Estate Trust Bldg.

FIRE ALARM BOXES

of all types; built to meet all the requirements of the city or town installing first equipment or adding to their present system. Finest material and workmanship; dependable in operation.

ORIGINATORS OF THE ALUMINUM BOX

The designers of Harrington-Seaberg products were the first to recognize and adopt aluminum as the ideal material for fire alarm boxes. This is a distinct advance over the old cast iron type and eliminates all possibility of rust or corrosion. Find out about these improved boxes before you decide upon new equipment—our catalog will be mailed promptly upon request.

HARRINGTON-SEABERG CORP.

Moline Dept. G Illinois

Selden

6-CYLINDER SPEED MODELS for Fire Apparatus, especially triple combination outfits, also City Service Trucks.

PACEMAKER with 6-cylinder 55½ H.P. motor and 4-speed transmission will pump 350 gallons of water per minute.

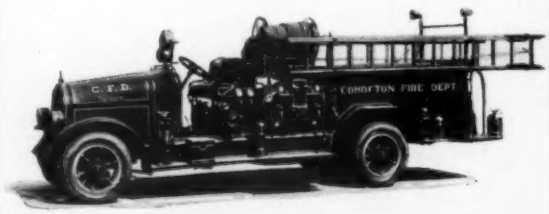
ROADMASTER with 6-cylinder motors, which will pump from 500 to 750 gallons per minute.

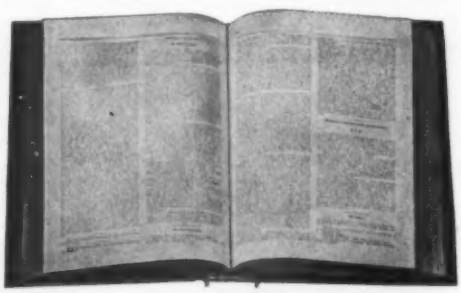
YOUR ASSURANCE OF SATISFACTORY PERFORMANCE—the large number of Pacemakers and Roadmasters now in actual fire fighting service giving 100% satisfaction.

Special proposition to Fire Apparatus Manufacturers.

SELDEN TRUCK CORPORATION

Rochester, N. Y.





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HALE PUMPS

THROUGH constant improvement in design, methods of manufacture and materials the *Hale* pump has steadily forged ahead.

HALE FIRE PUMP CO.

Conshohocken, Pa.

Motor Fire Apparatus Mounted on **Standard Type Chassis**

Send for descriptive circular.

AMERICAN FIRE EQUIPMENT CO.

9 Broad St., Boston, Mass.

PROPOSED IMPROVEMENTS

Chattanooga, Tenn. — National Board of Fire Underwriters recommended that a new fire alarm system be installed.

Dallas, Tex.—To provide in budget for next fiscal year for addition of a salvage corps to consist of 8 men and necessary equipment.

Hoquiam, Grays Harbor Co., Wash.—New ladder truck to cost $14,500 to be purchased.

Point Pleasant, Mason Co., W. Va.—Agitating for the purchase of fire apparatus following fire.

San Francisco, Cal.—Chief Thomas R. Murphy recommended the erection of three new fire houses with necessary apparatus and equipment and the appointment of 325 new members to the fire department in his annual report.

Tampa, Fla.—National Board of Fire Underwriters recommend of the erection of several new fire stations, and that a fire boat be kept at Davis Islands station. John B. Holton, Chief of Fire Dept.

Maywood, Cook Co., Ill.—Frank F. Gustavisen, Chairman of Fire Committee, recommended that a new fire station be erected in southern part of village, the purchase of a hook and ladder truck, and the purchase of a car for the chief.

Marengo, Iowa Co., Iowa.—The purchase of a chemical apparatus is urged.

Jewell, Hamilton Co., Iowa.—Agitating for the purchase of fire apparatus and two chemical tanks with capacity of 35-gallons.

McGrath, Aitkin Co., Minn.—Fire department has has been organized with Pete Klingl as chief.

New Brunswick, Middlesex Co., N. J.—Chief Harry J. Francis recommended in his annual report the purchase of a triple combination car.

Central Bridge, Schoharie Co., N. Y.—Hose company passed resolution asking fire commissioner to purchase more hose and other equipment. Will purchase a siren.

Rochester, N. Y.—Common Council voted $175,000 for new motor apparatus for fire department.

Rio Vista, Solano Co., Cal.—A $50,000 bond issue approved at election held recently part of which is to be used for the purchase of fire apparatus.

Des Moines, Polk Co., Iowa.—Funds asked for construction of two new fire stations. Two new pumpers also considered.

Richardson Park, New Castle Co., Del.—Funds being raised for purchase of fire apparatus for Five Points fire company.

Orange City, Sioux Co., Iowa.—Recent severe fire brought out inadequacy of fire department apparatus.

New Orleans, La. — Following survey by N. F. P. A., statement made that city needs between 200 and 300 more fire alarm boxes.

Westerville, Franklin Co., Ohio.—City may purchase fire department equipment. Chief Arn urges purchase of triple combination car.

Federalsburg, Caroline Co., Md.—Nearly $5,000 raised towards purchase of fire apparatus.

Lyndhurst, Bergen Co., N. J.—Mayor John F. Woods empowered by city council to make any necessary purchases for fire alarm or fire department needs.

Sonora, Tuolumne Co., Cal.—Trustees requested to consider instalation of fire alarm system. Planned to install 12 boxes at first.

Burbank, Los Angeles Co., Cal.—Considering floating bonds for construction of fire station; 2 needed.

St. Cloud, Stearns Co., Minn.—Plans almost completed for installation of new fire alarm system; plans call for 28 boxes.

Savannah, Chatham Co., Ga.—Erection of new fire headquarters recommended by Chief John Monroe in annual report.

Mishawaka, St. Joseph Co., Ind.—City to spend $10,000 for additional fire department equipment. Mayor Brady requested purchase of pumper for north side station.

Oskaloosa, Mahaska Co., Iowa—Chamber of commerce in favor of purchase of new pumper; present one 8 years old.

Mecca, Parke Co., Ind.—A fire department has been organized with H. L. Gilderland as acting chief. Equipment to be purchased.

Marietta, Washington Co., Ohio—The purchase of a new fire truck is contemplated.

Toronto, Jefferson Co., Ohio—City Council authorized City Solicitor A. W. Moreland to prepare the necessary legislation for a bond issue in the amount of $15,000 for the purpose of purchasing a new fire truck, new hose.

Enumclaw, King Co., Wash.—Chief Johnson recommended the purchase of new pumper.

East Grand Rapids, (Mail Grand Rapids), Kent Co., Mich.—Village council in favor of purchase of new pumper for department.

Sellwood, Portland Co., Ore.—Board of Trade considering purchase of fire apparatus.

Sacramento, Cal.—Special election to be held on the question of bond issue for a central fire alarm system, additional fire alarm boxes and equipment.

Deland, Volusia Co., Fla.—City to erect a new fire station. Address The City Commission.

Whitesboro, Oneida Co., N. Y.—May purchase new apparatus in the near future. Joseph N. Sullivan, chief.

Columbus, Franklin Co., Ohio—Fire Chief Daniel recommended the erection of two new fire stations and drill tower in his annual report to city council.

Richfield, Juniata Co., Pa.—Fire Department to erect a station and purchase a pumper.

Dallas, Tex.—City to erect a fire station. Harre M. Bernet, Architect, 603 Melba Bldg.

Juneau, Dodge Co., Wis.—To purchase a new pumper truck.

Amboy, Blue Earth Co., Minn.—Considering purchase of new fire apparatus and construction of new fire station.

For Sale
Fire Alarm Equipment

One six circuit Gamewell automatic storage battery charging board with oak cabinet, One Gamewell four circuit repeater with oak cabinet, One Gamewell transmitter in oak cabinet, One Gamewell storage battery rack with one hundred cells BT battery. Practically new. Removed and replaced with larger equipment. Will sell F. O. B. New York or submit price on complete Fire Alarm system using this equipment guaranteeing work for five years. Central Station Equipment Co., 114 Liberty St., New York, N. Y. 4-10

CONVENTION DATES

May 10–13—NATIONAL FIRE PROTECTION ASSOCIATION (International). 30th Annual Meeting, Atlantic City, N. J. Secretary, Franklin H. Wentworth, 40 Central St., Boston, Mass.

May 19-20—NATIONAL FIREMEN'S ASSOCIATION. 28th Annual Convention, Chicago, Ill. Secretary, Captain J. E. Mersch, 715 Monroe Street, Evanston, Ill.

June (date not set)—SOUTHERN NEW YORK VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention and Tournament, Islip, N. Y. Secretary, August Kalb, 27 N. Center Ave., Rockville Center, N. Y.

June 8–10—HUDSON VALLEY VOLUNTEER FIREMEN'S ASSOCIATION. 37th Annual Convention, Port Jervis, N. Y. Secretary, Chief Chris W. Noll, Fire Department, Poughkeepsie, N. Y.

June 9–11—MARYLAND STATE FIREMEN'S ASSOCIATION, 34th Annual Convention, Westminster, Md. Secretary, George R. Lindsay, Hagerstown, Md.

June 10–12—ARIZONA STATE FIREMEN'S ASSOCIATION. 3rd Annual Convention, Prescott, Arizona. Secretary-Treasurer, Chief W. J. Nemeck, Douglas, Ariz.

June 22–24—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS—Fourth Annual Convention, Hotel Carpenter, Corner Merrimack and Franklin Sts., Manchester, N. H. Exhibit Hall, New Watertown, Mass. Chairman, Exhibit Com., Chief Henry H. Heitman, Waterbury, Conn.

July 13-15—MICHIGAN STATE FIREMEN'S ASSOCIATION. 52nd Annual Convention, Caro, Mich. Secretary, H. L. Williams, Ludington, Mich.

July 14—DELAWARE STATE VOLUNTEER FIREMEN'S ASSOCIATION. 6th Annual Convention, New Castle, New Castle County, Del. Secretary, Sam H. Carson, Dover. President, Geo. Clifton Maull, Lewes.

July 21–22—CENTRAL NEW YORK VOLUNTEER FIREMEN'S ASSOCIATION. 33rd Annual Convention and Parade, Endicott, N. Y. Secretary, Millwood Fitch, Moravia, N. Y. Secretary, Local Committee, Floyd L. Jackson, Endicott.

July 26-28—MONTANA STATE FIREMEN'S ASSOCIATION. 35th Annual Convention, Big Timber, Mont. Secretary, D. E. Moser, Bozeman, Mont.

July 27–28—WESTERN NEW YORK VOLUNTEER FIREMEN'S Association. Annual Convention, Kenmore, N. Y. Secretary, Henry A. Clark, 21 Porter Ave., Batavia, N. Y.

Aug.—CENTRAL PENNSYLVANIA VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention, Tyrone, Pa.

Aug. 9-14—WESTERN PENNSYLVANIA FIREMEN'S ASSOCIATION. 33rd Annual Convention, New Kensington, Pa. Secretary, Secretary Convention Committee, R. A. Kanouff, New Kensington.

Aug. 17-18—CONNECTICUT STATE FIREMEN'S ASSOCIATION. 43rd Annual Convention, Elks' Home, Washington St., New London, Conn. Secretary, D. W. Harford, South Norwalk.

Aug. 17-19—FIREMEN'S ASSOCIATION OF THE STATE OF NEW YORK, 55th Annual Convention, Alexandria Bay, N. Y. Secretary, Fred A. Davis, Fort Edward, N. Y.

Sept.—KANSAS FIRE CHIEFS AND FIREMEN'S ASSOCIATION. Tentative Month of Annual Convention, at Manhattan, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan.

Sept. 14–15—IOWA STATE FIREMEN'S ASSOCIATION, 49th Annual Convention, Manning, Ia. Secretary, E. E. Parsons, Marion.

Sept. 14-16—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. 47th Annual Convention, Fall River, Mass. Secretary, Daniel J. Looney, 1046 Old South Building, Boston, Mass.

Sept. 21-24—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. 30th Annual Convention, Battery Park Hotel, Ashville, N. C. Secretary, William R. Arbuckle, Supt. Fire Alarm, Bayonne, N. J. Chairman Exhibit Committee, Daniel J. Morgan, Sales Engr., Hazard Mfg. Co., Wilkes-Barre, Pa.

Sept. 27–29—ARKANSAS STATE FIREMEN'S ASSOCIATION. Annual Convention, Jonesboro, Ark. Date of meeting tentative. H. S. Compton, secretary. Central Fire Station, Little Rock, Ark.

Oct. 5–7—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. Annual Convention, Philadelphia, Pa. Secretary, Charles F. Clark, 411 Bellevue Avenue, Wayne, Pa.

Oct. 12-15—PACIFIC COAST ASSOCIATION of FIRE CHIEFS. 33rd Annual Convention, Fresno, Cal. Secretary, Chief Jay W. Stevens, 1014 Merchants Exchange Building, San Francisco, Cal.

Oct. 19–22—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS, 54th Annual Convention, Hotel Roosevelt, New Orleans, La. Secretary, Chief James J. Mulcahy, Yonkers, N. Y.

New Trade Literature Received

The following literature descriptive of up-to-date methods and equipment for fire prevention and fire extinguishing, has just been issued for general distribution, and can be procured by writing to the concern mentioned. Those desiring additional trade literature in which they are interested may use our regular "Information for Buyers" Page, listed in the Advertising Index.

Peter Pirsch & Sons Company, Kenosha, Wis.,—Seventy-two page Booklet, entitled Everything for the Fire Department; Catalogue No. 16. It is profusely illustrated, showing practically every modern device for fire extinguishment, together with prices of accessories.

Ahrens-Fox Fire Engine Co., Cincinnati, O.—Bulletin No. 142, describing test of 1,000-gallon pumper delivered to city of Dubuque, Ia., which came through the ordeal in excellent fashion. Also Bulletin No. 143 describing and illustrating the company's new piston type pumper just bought by the city of Red Wing, Minn.

HOW A SMALL MASSACHUSETTS FIRE DEPARTMENT WAS ORGANIZED

Chief Hill, Formerly of Waltham, Took Hold and Brought It Up to High Efficiency—Present Excellent Condition—Fire Fighting Facilities

UNDER direction of Chief W. H. Hill, the fire department of Belmont, Mass., has been reorganized and brought up to a state of efficiency that has caused much favorable comment from the citizens and town officials. Three years ago Chief Hill resigned as aid to Chief George L. Johnson, of the Waltham, Mass, fire department, to take charge of the Belmont fire department. At that time the latter consisted of one pumping engine, a Knox combination, ladder truck, and small Ford truck, there being only six permanent firemen in the department.

At the present time the apparatus includes two American-LaFrance 750-gallon triple combination cars, a Maxim city service truck, a Seagrave combination chemical and hose car, and a Gardiner car for the chief.

There are now 18 permanent firemen and 12 call firemen. The officers are Chief Hill; Captain James J. Maguire, acting deputy chief; Captain Charles Elder, of Engine Company No. 3, and Captain Edward Quigley, of Engine Company No. 1. There are three fire stations, the two-story brick headquarters building on Leonard street, near Belmont centre; the house of Engine 1 in Waverly square, and the house of Engine 3 on Fairview avenue in the Harvard Lawn section of the town.

A new Gamewell automatic fire alarm system has just been

Headquarters Company of Belmont, Mass., Fire Department. Chief Hill Is Fourth from Right.

installed in a brick addition built on the rear of the headquarters station. There is a machine shop on the ground floor and the fire alarm equipment on the upper floor. There is an entrance through a fire door to the second floor of headquarters. In the fire alarm room the equipment consists of a 12-circuit charging and switchboard, a 12-circuit protector board, and an 8-circuit repeater. The storage batteries are on the lower floor adjoining the machine shop. The alarm system is connected with a compressed air siren horn. There are seventy-four street fire alarm boxes.

The department is operated on the two-platoon basis and has 6,000 feet of 2½-inch cotton rubber lined hose. The town of Belmont covers about six square miles and has a population of 17,000. There is a system of mutual aid between the fire departments of Belmont, Watertown and Arlington. Belmont responds on telephone calls to Waltham in cases of emergency or multiple alarms.

There are 435 post hydrants available for fire department use. The high pressure service from the Arlington standpipe gives 130 pounds pressure and on the intermediate service from the Waban basin there is pressure of from 70 to 90 pounds. Last summer a new 60-inch main was laid connecting with the Metropolitan system and this gives 60 pounds pressure.

Under orders of Chief Hill automatic sprinklers have been installed in the basements of four school buildings, namely, the Moore Street School, the Roger Wellman School, the Payson Park School and the Daniel Butler School.

Before he assumed charge of the Belmont fire department Chief Hill served for ten years as a permanent fireman in Waltham and two years as a call man there. He is an able and progressive fire official and his work in strengthening and modernizing the Belmont department has won commendation.

Chief Hill is a member of the Fire Chiefs' Club of Massachusetts, the New England Association of Fire Chiefs, and the International Association of Fire Engineers.

HARRY BELKNAP.

Parking Garage Plan Defeated

The Board of Standards and Appeals of New York city rejected the application for a permit for the erection of a seven-story fireproof garage in the theatre zone of New York city which would have a capacity of 2,100 cars. This came as a surprise because of the continual preaching by Chief Kenlon that automobiles should be removed from the congested parts of the city.

"I am no alarmist," Chief Kenlon declared, "but unless we do something to take these automobiles off the streets in that neighborhood there may be a horrible disaster some day. It requires from twenty to twenty-five minutes now for fire apparatus to get through the congested streets in the theatrical district on account of the parking of hundreds of automobiles there. Around the new Madison Square Garden on some nights there have been such terrific jams that all the policemen in the world could not have cleared the way for fire apparatus in an emergency. I am for the building of any garage of the kind proposed which will take parked cars off the highways in this section of the city."

The vote of the board was three in favor of rejecting the application and one in favor of constructing the garage. The main objection to the construction of the garage came from the property owners of Fiftieth and Fifty-first streets, the district of the proposed garage.

Store Presents City With Fire Station

(*Continued from page* 341)

with shower and tub. The quarters of the officers and crews of the squad wagon and the truck company are entirely separate.

At the front of the building there are two artistic door ways 18 feet high and with an artistic electric light arranged on the wall between the doorways. Each doorway has two immense hinged doors which are three inches thick.

For cleanliness the walls of the first flooor are finished in tile white glazed to a height of 8 feet, above which the walls are painted a buff color. The floors are of red concrete marked off into squares. Each department is lighted with six indirect chandeliers, three of which are automatically lighted at night when alarms sound.

Another Fire Station Next Door

It will be noted in Fig. 1 that there is a brick fire house directly to the east of the new station. This houses engine No. 9 and combined with the squad wagon and truck company, provides unusual fire protection to the down town section of the city.

Equipment of Squad Wagon

The squad wagon (which is shown in Fig. 2) was built in the corporation yard on an American-La France chassis, and is equipped to rescue persons overcome by fire, gas or smoke. It carries six Gibbs helmets, a portable telephone, portable electric lights, two ten ton jacks and blocks for jacking up street cars in case of accident, a first aid tent, high pressure wheel for opening and closing high pressure gates, and cutting torches arranged on a frame which is carried by two men like a stretcher.

The portable telephone is used in high buildings in holding communication between the firemen and the chief. This consists of a reel of 500 feet of wire and a portable receiver and transmitter, the equipment having been built in the shops of the department of electricity. The portable search light is connected with a cord 300 feet in length and receives current from special batteries carried on the truck. The first aid tent can be set up in three minutes and is used in case of persons being injured at a big fire, all the men of the company being thoroughly skilled in rendering first aid.

Chief W. H. Goddard of the Mamaroneck, N. Y., Fire Dept.

Praises DONTFEAR Respirators

Gibbs-Wahlert Mask Co.,
386 Jay St., Brooklyn, N. Y.

Gentlemen:

Kindly send to Mamaroneck Fire Department, care of W. H. Goddard, Chief, thirty Dontfear Smoke and Fume Respirators. Send bill to Dr. J. H. Sloane, Fire Commissioner. I have used one of the Dontfear Respirators and find them to be O. K. and just what a fireman needs.

Appreciating your prompt reply, I am,

Yours very truly,
W. H. GODDARD,
Chief of Fire Dept.

In a HENDERSON Uniform

you always get correct tailoring, dependable quality, reliable workmanship, at the lowest prices consistent with values.

Catalogue illustrating the popular Styles of Firemen's Service Parade Uniforms or for prize contests, as well as Shirts, Belts, Hats, Caps, Badges, Banners, &c., mailed on request.

Write giving Number of Outfits desired and color Cloth preferred.

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242 W. 55th ST., New York City

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ROTARY PUMPS FIRE HYDRANTS

Agencies in Principal Cities

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INCORPORATED
St. Paul, Minnesota

CLIFTON SALVAGE COVERS

have all the good points.

- *The most convenient size—12 x 18 feet*
- *The right weight—About 38 pounds*
- *Strong, heavy duck and lapped seams*
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Many large Protective Departments use them

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CLIFTON MFG. CO.
Jamaica Plant District **Boston, Mass.**

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All Service
GAS MASK

provides

Complete Protection in
Carbon Monoxide Gas, Smoke or Fumes

Send for Bulletin F-3

MINE SAFETY APPLIANCES CO., Pittsburgh, Pa.

The Perfect Satisfaction and economy of wearing the

"FAMOUS KALAMAZOO"

Firemen's Uniforms has been proven by thousands of firemen. Catalog F501 will tell you all about them.

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Made of high quality blue uniform cloth, guaranteed not to fade. Cut on the New York Fire Dept. regulation pattern. Price $2.25, Postage extra. Other grades, $1.75 and up.

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Maxim-Built Ladders

are unsurpassed for design, completeness of equipment and sturdiness of construction. Like all Maxim apparatus and equipment, they are built "Just a Little Better All Around."

MAXIM MOTOR COMPANY, Middleboro, Mass.

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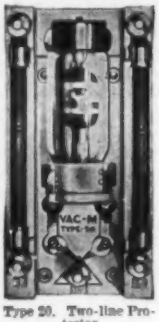
Protect Your Fire Alarm System with VAC-M Arresters



Type 20. Two-line Protector

You can't afford to take chances with your fire alarm system. Your delicate electrical signalling instruments must always be in working order. That means they have to be protected against lightning, short-circuits, and other electrical disturbances that will put them out of commission. The never-failing operation of your fire alarm system must be safeguarded in every possible way. That is why so many fire chiefs and fire alarm superintendents protect their signalling apparatus with VAC-M Arresters. They give the absolute protection you need.

Send for Complete Information

National Electric Specialty Co.
Toledo, Ohio

Chiefs Everywhere Praise Them Highly

Type 4. Single-Line Protector

JOHN H. CLAY, INC.

1320 Ridge Ave., Philadelphia, Pa.

Established 1864

Manufacturer Fire Dept. Supplies: Automatic Door Spring Outfits and All Kinds of Hydrant Connections.

Compressed Air Fire Whistles, Fire Alarm Boxes, Gongs, Etc.

Complete Systems Installed

Estimates Cheerfully Given

LOPER FIRE ALARM COMPANY
Stonington, Conn.

The Schavoir Gas Mask

The latest and most advanced development in gas masks. Fire officials everywhere should get the facts.

Write for Complete Information

Schavoir Rubber Co. Stamford, Conn.

Save Money for Your Fire Department

BY PURCHASING YOUR

FIRE DEPARTMENT SUPPLIES

FROM

Schwartz Bros., 110 North 8th St., Phila., Pa.

WRITE US FOR OUR SPECIAL PRICES

Our 18 Years' Experience in this business enables us to give you the best at the lowest prices

RED ARROW SIREN

Siren with Storm Hood

1. Double-tone, and of greatest carrying power.
2. Ball bearings throughout.
3. Accurately machined and balanced.

30 Days' Free Trial

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DECOT MACHINE WORKS
Sauk City, Wis.

Novo Acid Jars & Holders

of every description, stronger than lead and none-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

Send for Complete Catalog

LALLY FIRE APPLIANCE CO.
Wilmington Brass Co., Wilmington, Del.

Aims of British Institution of Fire Chiefs

The Institution of Fire Engineers, a British association, has recently issued the proceedings of its second annual conference, which took place at Edinburgh, Scotland, on July 9 and 10, 1925, and the aims of the body are set forth as "an institution the objects of which are to promote, encourage and improve the science of fire extinction, fire protection and fire engineering."

A. Pordage, Firemaster of Edinburgh, Scotland.

In an address on what the institution hopes to accomplish and its work, Chief A. Pordage, firemaster of Edinburgh, the first secretary and newly elected president of the institution, said in part:

"The first council consisted of a small band of chief officers and firemasters of the leading fire brigades of the country, who were actuated in their endeavours solely out of the jealous regard they hold for their profession.

"The *raison d'etre* of the institution has been manifested by the necessity for more scientific methods in fire fighting and fire protection of the community.

"The National scale of pay and conditions in the fire service are now such as to attract men of good education and standing, and by opening the Service to this class of men the municipalities are not imposing any additional economic burden on their respective communities.

"It is daily becoming more apparent that the responsibilities of the Executive Officer and personnel of a Fire Brigade in the discharge of their functions in maintaining the efficiency of the highly technical equipment and in fire fighting, are such that they cannot and should not be shared by any other departmental authority. The requirements, the training and discipline are so complex and different from any other municipal organization that it is necessary in the interests of the community that the Fire Brigade should be controlled by its own organization.

"The Institution already includes Chief Officers and Firemasters of the principal Brigades in Great Britain and Ireland, India, South Africa, Australia, Shanghai, Penang and Singapore; the principals of the leading Fire Engine Manufacturers and Fire Assessors. There are also Hydraulic Engineers and Consulting Analytical Chemists prominent in fire research work.

"There are several important factors governing the fire service which may properly receive the serious consideration of the Institution, some of which were included in the recommendations to Parliament by the Royal Commission's report, 1924, an outstanding item being that of cooperation between several independent brigades in circumscribed areas each possessing certain units of material localized by the assessable value of its territory and which, though adequate for coping with 95 per cent of fires, are wholly inadequate to cope with the remaining 5 per cent of what may be really serious fires bordering on conflagration.

"By a recognized system of cooperation, groups of Brigades would be available to respond to the contingency of the moment, and prevent what usually becomes an inevitable disaster before assistance from outside the area is summoned. It requires no stretch of imagination to compile an effective organization between local authorities possessing efficient units for combined operations in an emergency.

"Another matter which requires elucidation is whether our methods of fire extinction are keeping pace with the advance made by building construction and sciences employed in manufactures and storage of commodities. I think it will be generally agreed that progress in commerce should not be retarded by lack of protection and preventive measures, but that both sides should advance together.

"With the increase in the height and dimensions of our stores, factories and mills, in which immense capital is invested, the fire protection methods and equipment must not be found wanting, not necessarily in numbers of units but in effective powers of dealing with the increasing problems and responsibilities created by the progress of the age.

"There is also a large field for research in the direction of the mechanical side of the service; there is food for thought on the part of the engineer as to whether he is producing the essentially necessary type of fire-fighting equipment. We must jealously guard the effective engineering requirements to see that the Fire Service does not become a by-product of the motor industry.

"I fear that instead of the effective fire pump being the prime factor of the motor combination, it is frequently the secondary consideration and adapted to the standard motor engine. It must, of course, be admitted that the maximum engine horsepower is absorbed by the pump as against power absorbed on the road, consequently the engine power must be adapted to provide the requisite pump efficiency."

Stream Relayed Through Long Line

A fire which was fought in a home near Greenville, R. I., is of interest to the firemen because of the long lines laid to the fire and the use of three pumpers to relay the fire stream.

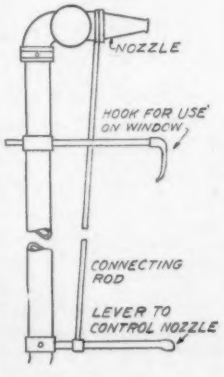
The Greenville company made a run of 1.2 miles and together with the hose carried by the ladder company, laid 1650 feet of hose. The Georgiaville company traveled seven miles to the scene of the fire, laid their hose and connected to the line, 1,850 feet from the first pumper. The Johnston hose company made a run of 5.6 miles and laid a line of 2,000 feet of hose.

The following figures taken when the relay was working at its best enables one to get an idea of the method of relaying fire streams. The Johnston apparatus sent the stream out at 280 pounds engine pressure, operating at a 5-inch vacuum; the Georgiaville company received the water at 22 pounds and relayed it to the next apparatus at 205 pounds; the Greenville pumper received the stream at 8 pounds and boosted the pressure up to 165 pounds, giving a nozzle pressure of 99 pounds and delivering 226 gallons of water a minute.

The firemen of the Woonasquatucket Valley have formed a firemen's league, and the fact that the proper cooperation is secured is in evidence by the manner in which the fire companies worked for a common goal.

Elevating Nozzle

A nozzle so arranged that it can be elevated to fight either ceiling or floor fires from a window ledge, has been suggested by Alexander J. Gray of Brooklyn, N. Y.



It consists primarily of a nozzle which can be moved either up or down about a pivot in a manner similar to some of the turret nozzles. The nozzle is attached to a pipe which may be made up in one or two sections for quick handling. Attached to some point on the pipe by means of a metal band or other device is a pole on which is fastened a hook to enable the instrument to be hooked on to a window ledge. At a lower section on the pipe is some kind of pivot arrangement to which is attached a handle. A connecting rod joins the nozzle with the lever. By moving the handle either up or down, the nozzle direction is changed.

Where, due to the intensity of the heat, it is impossible to attack the fire from close quarters, the nozzle can be hooked on to the window above and operated from the floor below. The fire stream could be deflected from the ceiling thereby cooling down a large area, and permitting the men with hose lines to assume a closer position.

Fire Bugs in Port Limon, C. R.

Following the fire in November which destroyed twenty-two buildings, entailing a loss of $30,000 in Port Limon, C. R., several other attempts have been made to add to the list of tragedies. One of the most recent crimes was the attempt to set fire to a residence opposite the Catholic church. The flames were discovered, however, by citizens who succeeded in extinguishing them before they got under full headway. Public opinion holds that there is a deliberate attempt to wipe out a certain portion of the city by this means.

Examinations by London Fire College

Of special interest to the students who are attending fire courses and school, is the examination questions prepared for those who would graduate from the Institution of Fire Engineers (London, England). In question 13 is included the charge for responding to out of district fires.

PART I.—EDUCATIONAL.

Morning Session.—Time allowed three hours

N. B.—Only *nine* questions to be attempted, of which Nos. 1, 2, 5, 7, 10 and 13 are compulsory.

1.—Write an essay on the growing demand for technical education and training for members of the Fire Service.

2.—Dictation, as given by the examiner.

3.—Add together $69\frac{1}{4}$, $53\frac{3}{8}$ and $119\frac{5}{8}$; find the average of these three numbers, and state what percentage of 92 is this average.

4.—If the £ = 103 francs and a metre is 39.3 in., state the cost both in pounds and francs of $15\frac{1}{2}$ yards at 7s. 6d. per yard, and find the number of metres in a quarter of a mile.

5.—The diameter of a cylindrical tank is 4 ft. 9 in., and its length is 11 ft. How many cubic feet of water does it contain, and what will be the weight of the contents if one cubic foot weighs 1,000 ounces?

6.—The distance (s) a body will fall in a given time (T) at a velocity (V) under the influence of gravity (G) is expressed by the formula: $S = VT + \frac{1}{2} GT^2$.

Calculate S when V = 10 feet per second.
T = 17 seconds.
G = 32.2 feet per second.

Give the answer to the nearest yard.

7.—The water level in a dock measuring 247 ft. by 39 ft. 9 in. is 15 ft. 9 in. What is the quantity in gallons, and how long would it last if three fire engines were pumping at the rate of 225, 335 and 430 gallons per minute respectively?

8.—At a fire in a building of four floors the two upper floors are alight, and water has accumulated to the extent of 4 in. on the first floor and 7 in. on the second floor. The floor space is 93 ft. 4 in. by 39 ft. 7 in. on the first floor and that of the second floor 87 ft. 3 in. by 38 ft. 9 in. What is the weight of water on each floor?

9.—A fire escape is pitched against a building so that the head of the ladder just reaches a window 71 ft. above the ground. If the base of the ladder is 17 ft. from the building, what is the ladder extension?

10.—Define any *nine* of the following:—Hypotenuse; Superficial area; Percentage; Co-efficient; Rectangle; Equilateral triangle; Average; Arc of circle; Segment; Ratio; Cross-section; Formula.

11.—Divide by factorisation: $\frac{3x^2 + 14x + 8}{3x^2 - 10x - 8}$ by $\frac{3x^2 - 14x + 8}{3x^2 + 10x - 8}$ and

Multiply the result by: $\frac{x^2 - 8x + 16}{x^2 - 16}$.

12.—Solve $5(x + 2y) - (3x + 11y) = 14$.
$7x - 9y - 3(x - 4y) = 38$.

13.—Charge for Country Fire:—
Royal Commission Scale of Charges for out of District Fires.

Appliances.	For turning out.	For run out and back per mile.	Per hour or part thereof whilst at fire. While not pumping.	Per hour or part thereof whilst at fire. While pumping.
Motor pump.....	£2 10 0	7 6	£1 1 0	£2 2 2
Motor escape.....	1 5 0	4 0	1 1 0	— — —
Motor tender.....	1 5 0	4 0	1 1 0	— — —
Motor lorry.....	1 0 0	2 6	5 0	— — —
Officers and men.		*While standing by or at fire — per hour or part thereof, each. Up to 5 hours	After 5 hours	
Officers in charge at fire.	10 0	10 0	7 6	
Firemen.	5 0	3 6	2 6	

Make up account of fire as under, calculated on the above scale of charges.

Brigade receives call at 10 a. m. to fire 21 miles distant.

Attendance.—Motor pump with officer in charge and seven men; motor escape with five men; motor tender with seven men.

Motor pump got to work at 11 a. m. and knocked off at 6.30 p. m.

Returns.—Motor pump returned to station at 10 p. m.; motor escape returned to station at 8 p. m.; motor tender returned to station at 1 a. m. with officer in charge.

Motor lorry, driver and four men sent out to pick up hose at 8 a. m. following morning, returning at 11 a. m.

Note.—All motor vehicles take one hour to reach the fire and one hour on return journey.

*Officer's and men's time to include time occupied in the run out and back.

PART II.—TECHNICAL.

Afternoon Session.—Time allowed 2½ hours.

Only *ten* questions to be answered, of which Nos. 1, 4, 5, 7 and 13 are compulsory.

1.—State briefly what you understand by the term "Spontaneous Combustion," and give three instances of same.

2.—How are units of heat measured, and describe the difference between a thermometer and barometer.

3.—What is the action of a jet of water on a fire, and give three instances where water should not be used.

4.—Describe the method you would employ in dealing with fires as follows:

(*a*) In a motor vehicle due to burst petrol pipe.
(*b*) In a cinema operating box.
(*c*) In an electric switchboard.
(*d*) In a domestic chimney with a long vent.
(*e*) Burning tar or pitch.

5.—Explain the primary use of the branch-pipe and nozzle, and give the area in square inches of the orifices of the following nozzles: ¾in., ⅞in., 1¼in.

What two nozzles would replace one 1in. nozzle, and what three nezzles would give the equivalent of a 1¼in. nozzle?

6.—If the pressure gauge on your pump indicates a head of 184 feet, what would be the equivalent in pounds per square inch?

7.—Explain why water rises in the suction hose when the pump of a fire engine is put into action.

8.—Give a short *resumé* of the care and maintenance of canvas fire hose, and state one or two materials with which it should not come in contact.

9.—Describe how the upper sections of a telescopic ladder are kept in position, and describe how the top section is extended.

10.—Describe any self-contained breathing apparatus with which you are familiar, or

Describe a type of smoke helmet in common use.

11.—Supposing that you are pumping from a source other than the town's mains—there being no hydrant available—and the supply to the radiator becomes choked, what means would you adopt to keep your engine at work?

12.—What precautions should be observed by the driver of a motor fire engine after returning from a run to assure himself that the engine is in an efficient condition for the next run?

13.—Explain any five of the following terms:—Static pressure; Vacuum; Feet-head; Multi-stage pump; Series Pumping; Breeching (collecting and dividing); Hose Becket; Foot-valve; Sprinkler-head; Hand-pump.

Fire Prevention in Toledo

Organized fire prevention work carried on in Toledo, Ohio, is administered by two agencies. While the per capita fire loss in 1925 was much smaller than in many other cities of the same size, the $1,219,821 conflagration loss still exceeds the amount which it is possible to establish. Through its 7,380 inspections of buildings last year the city performed practically the only preventive work on the part of the municipal governmen. Probably the agency doing the greatest amount of fire prevention work is the Ohio Inspection Bureau, through its insurance rating service. Last year the inspectors of this bureau surveyed in Toledo nearly 3,000 buildings, all of which were wholly or partially occupied for business or industrial purposes. During the year there were 5,243 hazardous conditions found by the inspectors, for which they made an added charge in determining the insurance rates. Most of the offenders of fire preventive etiquette are found in the class called "Light," which numbered 2,125. Most of these were due to faulty electric wiring and the use of electric equipment installed in an unsafe manner.

It is generally conceded that sound fire preventive work involves two principles. In the first place there should be regular and careful inspection of all buildings in the city, and the inspection department should have the power to enforce the fire preventive rules and regulations. At the present time the fire department conducts its inspections intermittently. Only in the case of buildings equipped with automatic sprinkler systems are regular inspections conducted by the Ohio Inspection Bureau. But quite regularly the state fire marshal and the building inspector examine the theatres and other public gathering places.

The great advantage in having buildings surveyed by regular firemen is that it familiarizes them with the buildings in their districts. If serious hazards are discovered by the firemen in these surveys, the owner could be forced to remove such conditions through the general police power. It might be impossible for the department to enforce minor recommendations relative to decreasing the fire hazard in the absence of ordinances to that effect, but it is different with the Ohio Inspection Bureau, whose recommendations are usually carried out because it is to the owner's financial advantage to do so, as a reduction in fire insurance rates may result. Last year the bureau was able to secure about two thousand improvements conducive to a lessened fire hazard. The chief improvements secured were as follows:

Chemical extinguishers installed, 337; no smoking signs placed, 572; change in roofs, 150; waste, refuse and rubbage cans installed, 242; water cans or pails installed, or made standard, 118. The National Board of Fire Underwriters, and the National Fire Protective Association have recommended the establishment of a fire preventive bureau in connection with the fire department. Toledo has a population of 288,000. The fire department consists of 19 fire stations, 42 companies, 420 firemen.

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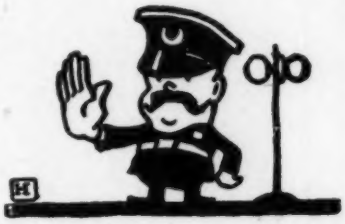

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ADVERTISING INDEX

Advertising Pays—in Fire Engineering

Abrahams & Co. 377
Ahrens-Fox Fire Engine Co. 333
Amdyco Corp. 337
American District Telegraph Co. 380
American Fire Equipment Co. 370
American-LaFrance Fire Engine Co. 366
Anderson Coupling & Fire Supply Co. 377
Batchelder Co., Fred M. 380
Bi-Lateral Fire Hose Co. 377
Braxmar Co., C. G. 373
Brunssen Co., Geo. 373
Buckeye Iron & Brass Works 380
Buffalo Fire Appliance Corp. 361
C. A. M. Mfg. Co. 366
Clay, Inc., John H. 374
Clifton Mfg. Co. 373
Combination Ladder Co. 378
Darling Valve & Mfg. Co. 365
Decot Machine Works 374
Eastman Co., Samuel 369
Eddy Valve Co. 378
Erick Electric Siren Co. 377
Eureka Fire Hose Mfg. Co. ..... *Front Cover*
Everson-Ross Co. 380
Fabric Fire Hose Co. ..... *Back Cover*
Foamite-Childs Corp. 335
Gamewell Co. 338
Garl Signal Co. 334
General Motors Truck Co. 358
Goodrich Rubber Co., B. F. ..... *Inside Front Cover*
Gibbs-Wahlert Mask Co. 373
Hahn Motor Truck Co. 378
Hale Fire Pump Co. 370
Harrington-Seaberg Corp. 370
Henderson-Ames Co. 373
Henderson & Co. 373
Information for Buyers **379**
International Harvester Co. ..... *Inside Back Cover*
Jaeger Portable Power Corp. 378
Kenosha Fire Engine & Truck Co. 378
Lally Fire Appliance Co. 374
Larkin Mfg. Co. 378
Loper Fire Alarm Co. 374
Maxim Motor Co. 374
Mine Safety Appliance Co. 373
Morse & Son, Inc., Andrew J. 377
National Electric Specialty Co. 374
Northern Fire Apparatus Co. 336
Pirsch & Sons Co., Peter 377
Reed's Sons, Jacob 377
Rensselaer Valve Co. 378
Sanford Motor Truck Co. 362
Seagrave Corp. 357
Schavoir Rubber Co. 374
Schwartz Bros. 374
Selden Truck Corp. 370
Signal Shirt Co. 369
Sterling Siren Fire Alarm Co. 331
Stoughton Wagon Co. 378
Union Water Meter Co. 369
Waterous Fire Engine Works 373
Wilmington Brass Co. 374
Wood & Co., R. D. 369
Woodhouse Mfg. Co. 377
Yellow Truck and Coach Mfg. Co. 358

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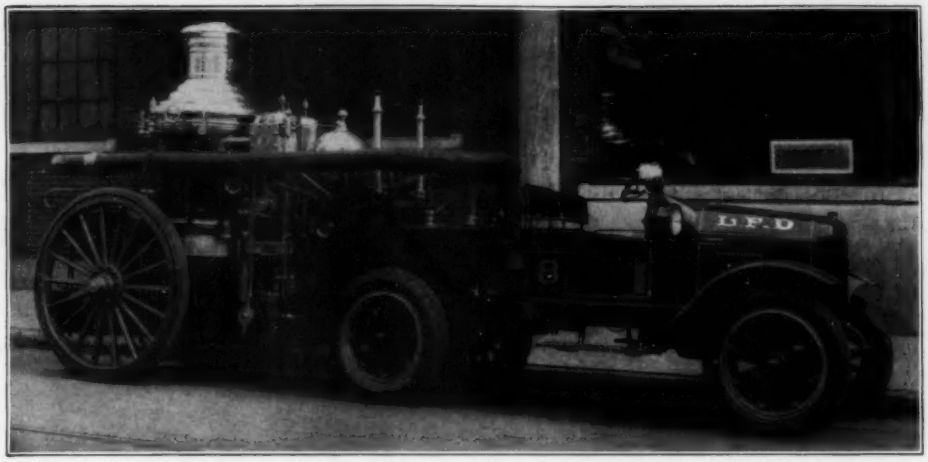

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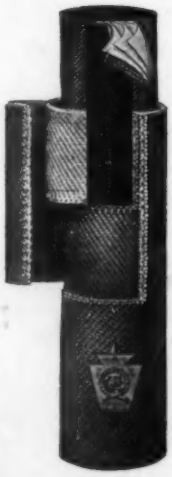

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